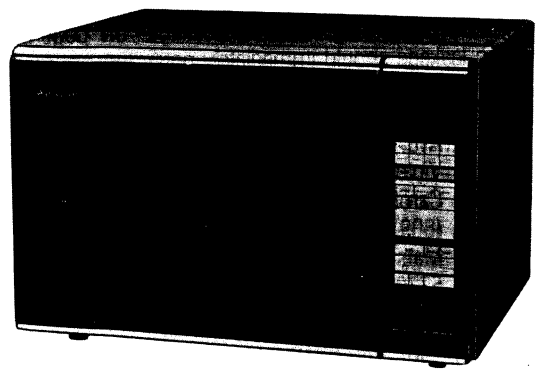
ORDER NO. MOD87080826C1
E1

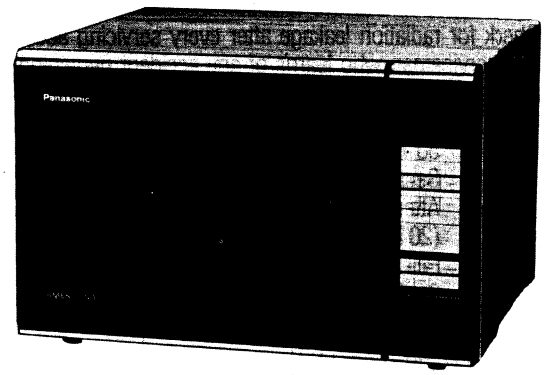
Service Manual

Microwave Oven

NN-9807
NN-9507



NN-9807



NN-9507

Specifications

Power Source :	120 V AC Single Phase 60 Hz
Power Requirement :	Microwave : 1,400 W (12.2 A) Heater : 1,500 W (12.5 A)
Output :	Microwave : 700 W (Full Power) Heater : 1,400 W
Oscillation Frequency :	2,450 MHz
Timer :	99 min. 99 sec. / 9 hr. 99 min.
Outside Dimensions :	23-7/8" (W) × 18-1/2" (D) × 15-3/8" (H) 606 mm (W) × 470 mm (D) × 390 mm (H)
Oven Cavity Dimensions :	16" (W) × 15-1/2" (D) × 9-7/16" (H) 406 mm (W) × 395 mm (D) × 240 mm (H)
Weight :	64 lbs (28.5 kg)
Specifications subject to change without notice.	

Panasonic®

Matsushita Services Company
50 Meadowland Parkway,
Secaucus, New Jersey 07094

Matsushita Electric of Canada Limited
5770 Ambler Drive,Mississauga,
Ontario, L4W 2T3

Panasonic Hawaii Inc.
91-238 Kauhi St. Ewa Beach
P.O. Box 774
Honolulu, Hawaii 96808-0774

Panasonic Sales Company, Division of Matsushita Electric of Puerto Rico, Inc.
Ave. 65 De Infantería, KM 9.7
Victoria Industrial Park
Carolina, Puerto Rico 00630

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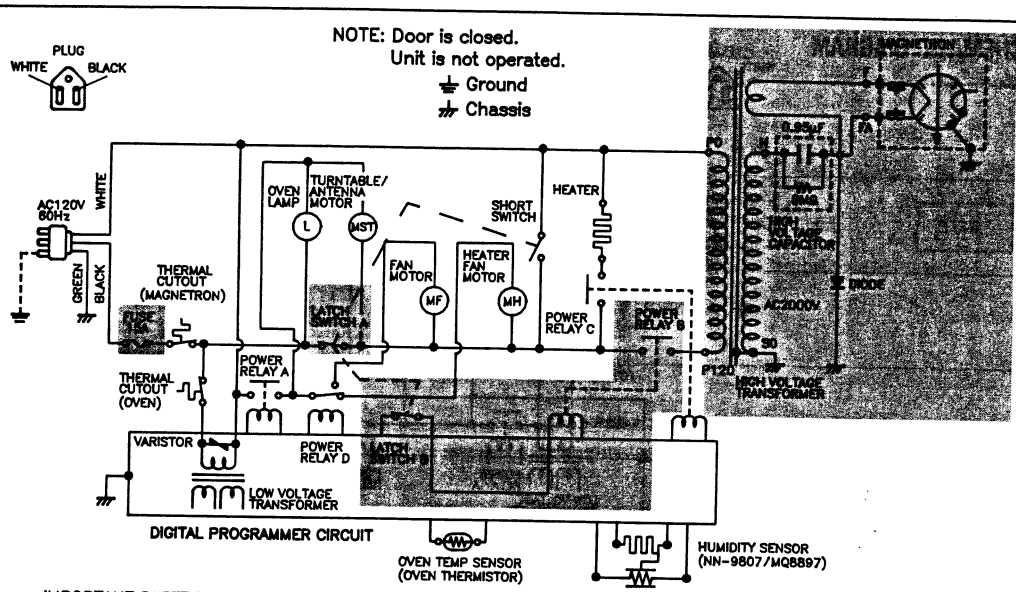
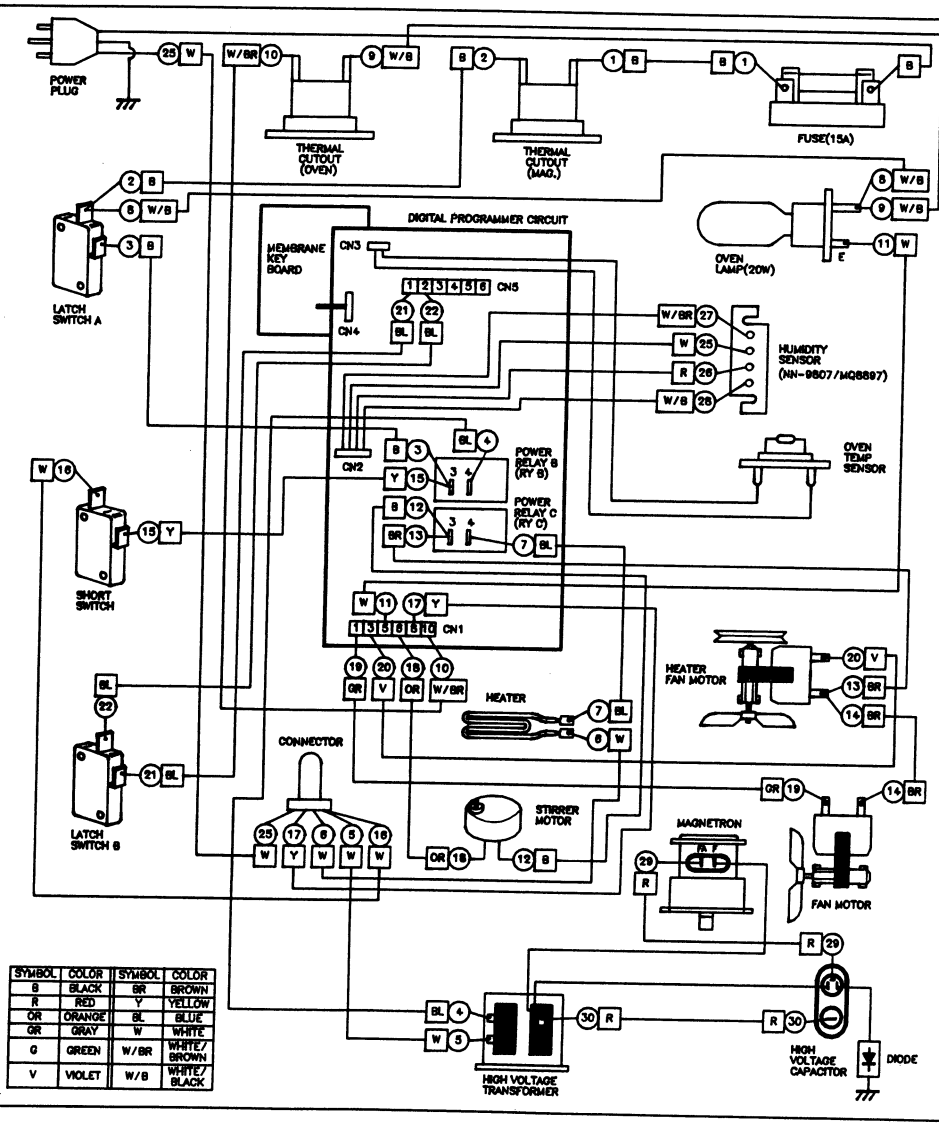
SCHEMATIC DIAGRAM (Canadian models)

SCHEMATIC DIAGRAM



IMPORTANT SAFETY NOTE: THE SHADED AREA ON THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM MICROWAVE RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING, IT IS ESSENTIAL THAT ONLY MANUFACTURER'S SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SHADED AREAS OF THE SCHEMATIC DIAGRAM.

WIRING DIAGRAM



SYMBOL	COLOR	SYMBOL	COLOR
B	BLACK	BR	BROWN
R	RED	Y	YELLOW
OR	ORANGE	BL	BLUE
GR	GRAY	W	WHITE
G	GREEN	W/BR	WHITE/ BROWN
V	VIOLET	W/B	WHITE/ BLACK

Fig. 1

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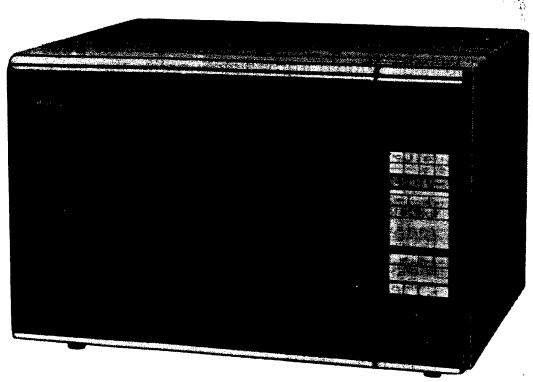
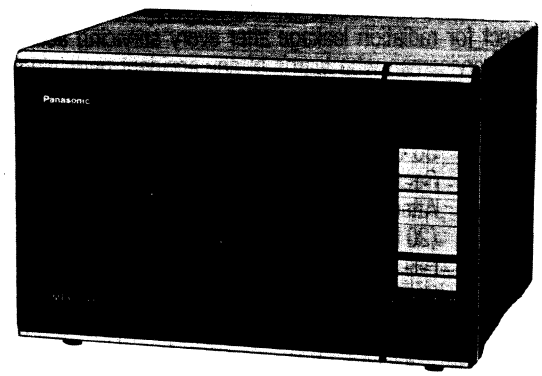


NN-9807



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Specifications

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This service manual covers products for following markets.
When troubleshooting or replacing parts, please refer to the country identifications shown below for your applicable products specification.

APH···For U.S.A. and some of Latin America countries
CPH···For Canada
AQH···For U.S.A.
CQH···For Canada

WARNING

1. This product should be serviced only by trained qualified personnel.
2. Though this product has been manufactured in compliance with:
   "Federal Performance Standard 21 CFR Subchapter J" (D.H.H.S.): U.S.A. models
   or "Radiation Emitting Devices Act" (NHW): Canadian models
   it is very important all repairs should be made in accordance with procedures described in this manual to avoid being exposed to excessive microwave radiation.
3. Check for radiation leakage after every servicing according to the "Procedure for Measuring Radiation Leakage" on page 26.
4. Any serviceman who learns of any accident pertaining to microwave radiation leakage should immediately notify the appropriate address listed below.

IN U.S.A. (MSC)	Matsushita Services Company 50 Meadowland Park way, Secaucus, New Jersey 07094 Attention: Engineering Support Division. (201) 348-7000	IN PUERTO RICO (PSC)	PSC Ave. 65 De Infanteria, KM 9.7 Victoria Industrial Park Carolina, Puerto Rico 00630 (809) 750-4300
IN HAWAII (PHI)	PHI 91-238 Kauhi St. Ewa Beach P.O. Box 774 Honolulu, Hawaii 96808-0774 (808) 682-2851	IN CANADA (MELCA)	Matsushita Electric of Canada Limited 5770 Ambler Drive, Mississauga, Ontario, L4W 2T3 (416) 624-5010

5. There are special components used in the microwave oven which are important for safety. These parts are shaded on the schematic diagram and marked with a ⚠ on the replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent microwave leakage, shock, fire, or other hazards. Do not modify the original design.

PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

(A) Do not operate or allow the oven to be operated with the door open.

(B) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary:
   (1) Interlock operation
   (2) Proper door closing
   (3) Seal and sealing surfaces (arcing, wear, and other damage)
   (4) Damage to or loosening of hinges and latches.
   (5) Evidence of dropping or abuse

(C) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, waveguide or transmission line, and cavity for proper alignment, integrity and connections.

(D) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.

(E) A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.

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LOCATION OF NAMEPLATE

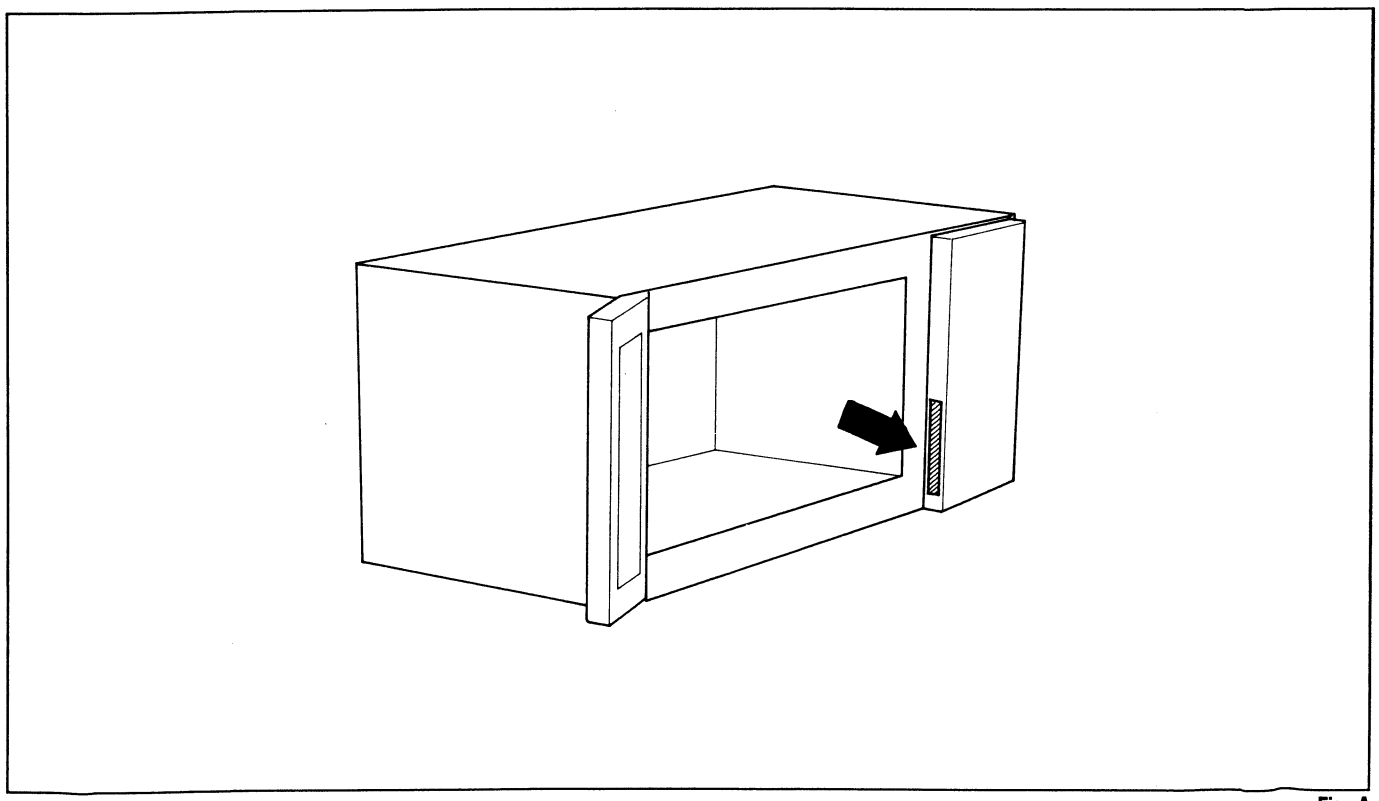


Fig. A

The nameplate is located on frame of the escutcheon base as illustrated in Fig. A.
The model and serial numbers will be found on this nameplate.

FEATURE CHART (NN models)

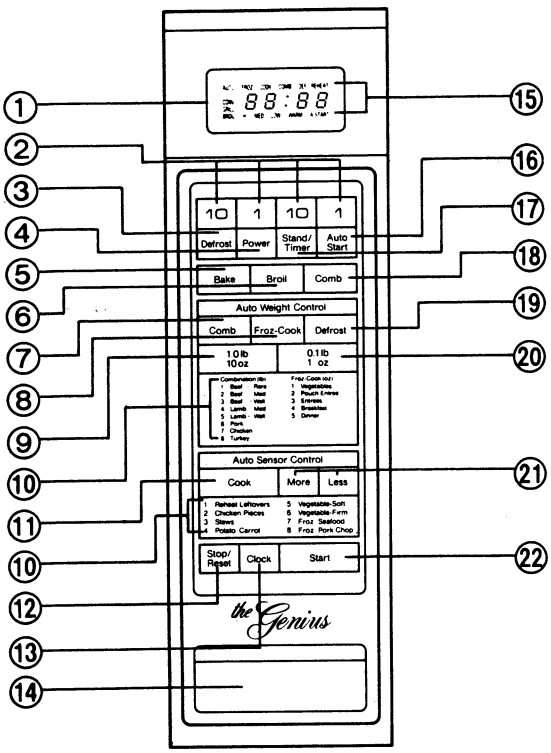
MODEL / FEATURE	NN-9807	NN-9507
CYCLIC DEFROST	○	○
3-STAGE COOKING	○	○
AUTO SENSOR COOK	○	—
AUTO WEIGHT DEFROST	○	○
AUTO WEIGHT FROZ COOK	○	○
AUTO REHEAT	—	○
AUTO WEIGHT COMBINATION	○	○
COMBINATION (TIME COOKING)	○	○
CONVECTION (AUTO PREHEATING)	○	○
CONVECTION (TIME COOKING)	○	○
BROILING	○	○
AUTO START	○	○
STAND/TIMER	○	○
DIGITAL CLOCK	○	○

FEATURE CHART (MQ models)

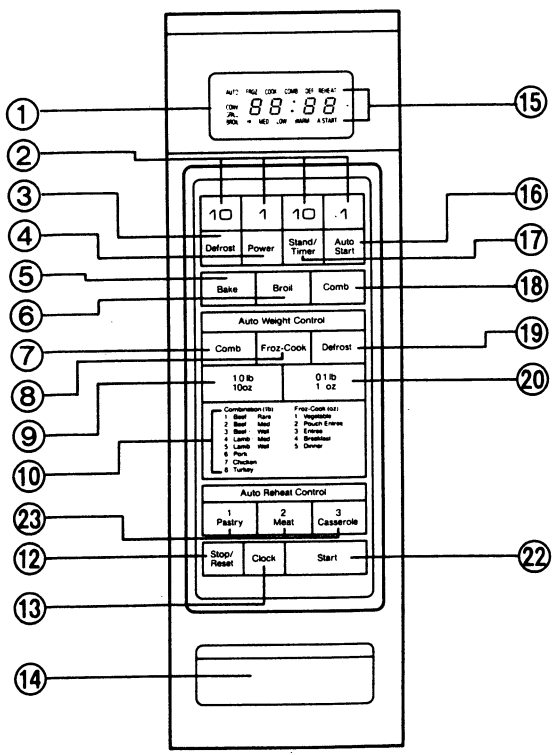
MODEL / FEATURE	MQ8897	MQ8877
CYCLIC DEFROST	○	○
3-STAGE COOKING	○	○
EASY-MATIC COOK	○	—
EASY-MATIC FROZEN FOODS	○	—
EASY-MATIC WEIGHT DEFROST	○	○
EASY-MATIC REHEAT	○	○
EASY-MATIC WEIGHT COMBINATION	○	○
COMBINATION (TIME COOKING)	○	○
CONVECTION (AUTO PREHEATING)	○	○
CONVECTION (TIME COOKING)	○	○
BROILING	○	○
AUTO START	○	○
TIMER/STAND	○	○
DIGITAL CLOCK	○	○

CONTROL PANEL (NN models)

NN-9807



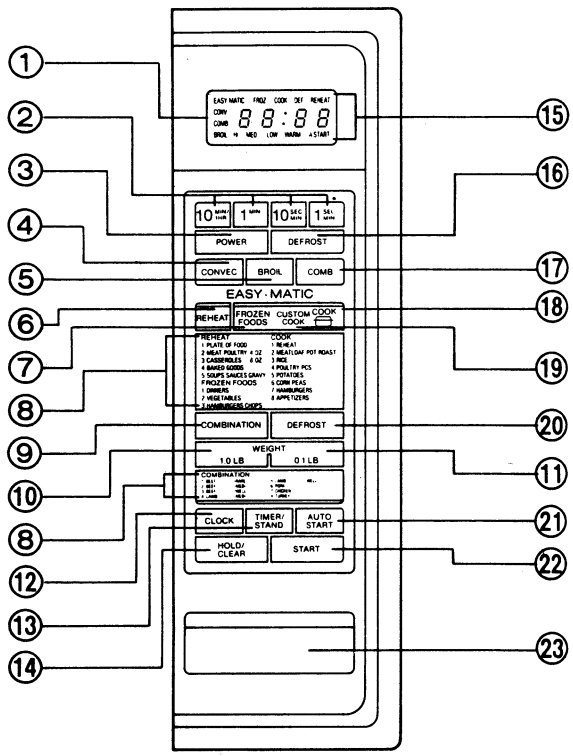
NN-9507



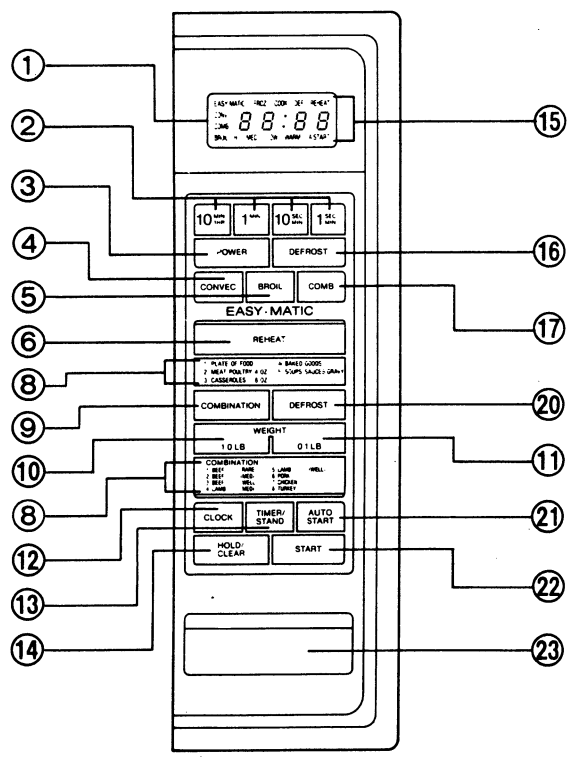
① Display Window
② Time Pads
③ Cyclic Defrost Pad
④ Power Pad
⑤ Bake Pad
⑥ Broil Pad
⑦ Auto Weight Combination Pad
⑧ Auto Weight Frozen Cook Pad
⑨ 1.0 Pound/10 Ounce Pad
⑩ Cooking Guide
⑪ Auto Sensor Cook Pad
⑫ Stop/Reset Pad
⑬ Clock Pad
⑭ Door Release Button
⑮ Indicator Lights
⑯ Auto Start Pad
⑰ Stand/Timer Pad
⑱ Combination Pad
⑲ Auto Weight Defrost Pad
⑳ 0.1 Pound/1 Ounce Pad
㉑ Doneness Control Pad
㉒ Start Pad
㉓ Auto Reheat Control Pads

CONTROL PANEL (MQ models)

MQ8897



MQ8877



① Display Window
② Time Pads
③ Power Pad
④ Convection Pad
⑤ Broil Pad
⑥ Easy-Matic Reheat Pad
⑦ Easy-Matic Frozen Foods Pad
⑧ Cooking Guide
⑨ Easy-Matic Weight Combination Pad
⑩ 1.0 Pound Pad
⑪ 0.1 Pound Pad
⑫ Clock Pad
⑬ Timer/Stand Pad
⑭ Hold/Clear Pad
⑮ Indicator Lights
⑯ Multi-Stage Defrost Pad
⑰ Combination Pad
⑱ Easy-Matic Cook Pad
⑲ Custom Cook Pad
⑳ Easy-Matic Weight Defrost Pad
㉑ Auto Start Pad
㉒ Start Pad
㉓ Door Release Button

OPERATION PROCEDURE (NN models)

	Step 1	Step 2	Step 3	Step 4	Step 5
Clock Set	CLOCK	Enter Time of Day: 10 1 10 1	CLOCK		
Time Cooking (2-Stage)	Select Power: POWER	Set Time: 10 1 10 1	POWER	10 1 10 1	START
Time Defrost	DEFROST	Set Time: 10 1 10 1	START		
Auto Weight Defrost	AUTO DEF	Set Weight: 1.0LB 0.1LB	START		
Auto Weight Frozen Cook	FROZ COOK 1~5	Set Weight: 10oz 1oz	START		
Auto Reheat	REHEAT 1,2 or 3 1~4	START			
Auto Sensor Cook	A.S. COOK	If desired: MORE LESS or	START		
Auto Weight Combination	Select Category: AUTO COMBI	Set Weight: 1.0LB 0.1LB	START		
Combination (Time Cooking)	COMBI	Set Time: 10 1 10 1	START		
Convection (Auto Preheating)	Set Oven temp.: BAKE	START			
Convection (Time Cooking)	After Preheating	Set Time: 10 1 10 1	START		
Broiling	Set Oven temp: BROIL	START	After Preheating	Set Time: 10 1 10 1	START

For more detailed operating sequence, see pages 34 through 42.

NOTES WHEN PROGRAMMING:

CLOCK SET:
(1) To reset time of day (TOD) tap Clock Pad twice to clear the time and enter the correct TOD.
(2) The clock will keep the TOD as long as oven is plugged in and electricity is supplied.

AUTO WEIGHT DEFROST:
(1) Stand time or time cooking can be programed after Auto Weight Defrost.
(2) Auto Start can not be programed before Auto Weight Defrost.
(3) The shape and size of the food will determine the maximum weight the oven can accommodate.

AUTO WEIGHT FROZEN COOK:
(1) Stand time or time cooking can be programed after Auto Weight Frozen Cook.
(2) The shape and size of the food will determine the maximum weight the oven can accommodate.

AUTO REHEAT:
(1) Stand time or time cooking can be programed after Auto Reheat.

AUTO SENSOR COOKING:
(1) The Auto Sensor system works by detecting a build-up steam on the humidity sensor. As foods cook in a microwave oven, steam is produced. When foods are covered, the steam will build up and escape from the dish in a burst. This burst of steam is detected by the humidity sensor and then the oven automatically calculates the remaining cooking time.
(2) When an Auto Sensor Cycle is selected, A1 through A8 will appear in the display window. The oven door should not be opened for longer than one minute when A1 through A8 appears in the display window. Opening the door may cause inaccurate cooking results. Once the steam is detected, a two beep signal is heard, and the remaining cooking time immediately appears in the display window and begins to count-down. At this time, the oven door may be opened to stir or turn foods.
(3) The room air temperature surrouding the oven should not be above 95°F when using Auto Sensor Cooking feature. Inaccurate cooking may result.
(4) Foods less than 3 or 4 ounces should be cooked by power and time, not by the Auto Sensor Cooking Cycle.

CONVECTION (Auto Preheating):
(1) After completion of preheating, be sure to open oven door and place food inside oven. If oven door is not opened after preheating, oven will maintain the selected temperature for 30 minutes. After 30 minutes, oven will shut off automatically.
(2) Oven should be preheated without the Glass Ceramic Tray in place.

AUTO WEIGHT COMBINATION:
(1) There are 8 categories for Auto Weight Combination Cook.
(2) The shape and size of the meat will determine the maximum weight the oven can accommodate.
(3) Stand time or a power level can be programmed after Auto Weight Combination Cook.

BROILING:
(1) If oven door is not opened after preheating, oven will maintain the selected temperature for 30 munutes. After 30 minutes, oven will shut off automatically.
(2) After completion of preheating, be sure to open oven door and place food on. Broiling pan and place on oven Broiling Rack in the Oven.

OPERATION PROCEDURE (MQ models)

	Step 1	Step 2	Step 3	Step 4	Step 5
Clock Set	CLOCK	Enter Time of Day: 10 1 10 1	CLOCK		
Time Cooking (2-Stage)	Select Power: POWER	Set Time: 10 1 10 1	POWER	10 1 10 1	START
Time Defrost	DEFROST	Set Time: 10 1 10 1	START		
Easy-Matic Defrost	Set Weight: 1.0LB 0.1LB	START			
Easy-Matic Reheat	Select Serving: REHEAT	START			
Easy-Matic Cook	COOK	If desired: CUSTOM COOK	START		
Easy-Matic Frozen Foods	FROZEN FOODS	If desired: CUSTOM COOK	START		
Easy-Matic Weight Combination	Select Category: EASY-MATIC COMBINATION	Set Weight: 1.0LB 0.1LB	START		
Combination (Time Cooking)	COMBI	Set Time: 10 1 10 1	START		
Convection (Auto Preheating)	Set Oven temp: CONVEC	START			
Convection (Time Cooking)	After Preheating	Set Time: 10 1 10 1	START		
Broiling	Set Oven temp.: BROIL	START	After Preheating	Set Time: 10 1 10 1	START

For more detailed operating sequence, see pages 34 through 42.

NOTES WHEN PROGRAMMING:

CLOCK SET:
(1) To reset time of day (TOD) tap Clock Pad twice to clear the time and enter the correct TOD.
(2) The clock will keep the TOD as long as oven is plugged in and electricity is supplied.

EASY-MATIC WEIGHT DEFROST:
(1) Stand time or time cooking can be programed after Easy-Matic Weight Defrost.
(2) Auto Start can not be programed before Easy-Matic Weight Defrost.
(3) The shape and size of the food will determine the maximum weight the oven can accommodate.

EASY-MATIC REHEAT:
(1) Stand time or time cooking can be programed after Easy-Matic Reheat.

EASY-MATIC COOKING:
(1) The Easy-Matic Cook system works by detecting a build-up steam on the humidity sensor. As foods cook in a microwave oven, steam is produced. When foods are covered, the steam will build up and escape from the dish in a burst. This burst of steam is detected by the humidity sensor and then the oven automatically calculates the remaining cooking time.
(2) When an Easy-Matic Cook Cycle is selected, "1" through "8" will appear in the display window. The oven door should not be opened for longer than one minute when "1" through "8" appears in the display window. Opening the door may cause inaccurate cooking results. Once the steam is detected, a two beep signal is heard, and the remaining cooking time immediately appears in the display window and begins to count-down. At this time, the oven door may be opened to stir or turn foods.
(3) The room air temperature surrouding the oven should not be above 95°F when using Easy-Matic Cooking feature. Inaccurate cooking may result.
(4) Foods less than 3 or 4 ounces should be cooked by power and time, not by the Easy-Matic Cooking Cycle.

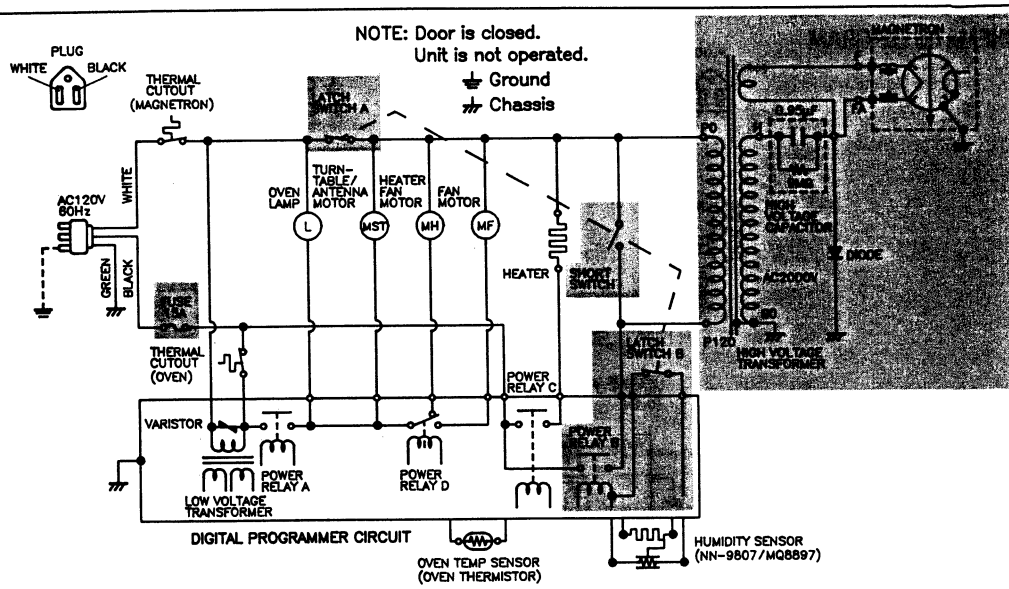
CONVECTION (Auto Preheating):
(1) After completion of preheating, be sure to open oven door and place food inside oven. If oven door is not opened after preheating, oven will maintain the selected temperature for 30 minutes. After 30 minutes, oven will shut off automatically.

EASY-MATIC WEIGHT COMBINATION:
(1) There are 8 categories for Easy-Matic Weight Combination Cook.
(2) The shape and size of the meat will determine the maximum weight the oven can accomodate.
(3) Stand time or a power level can be programmed after Easy-Matic Weight Combination Cook.

BROILING:
(1) If oven door is not opened after preheating, oven will maintain the selected temperature for 30 minutes. After 30 minutes, oven will shut off automatically.
(2) After completion of preheating, be sure to open oven door and place food on. Broiling pan and place on oven Broiling Rack in the Oven.

SCHEMATIC DIAGRAM (U.S.A models)

SCHEMATIC DIAGRAM



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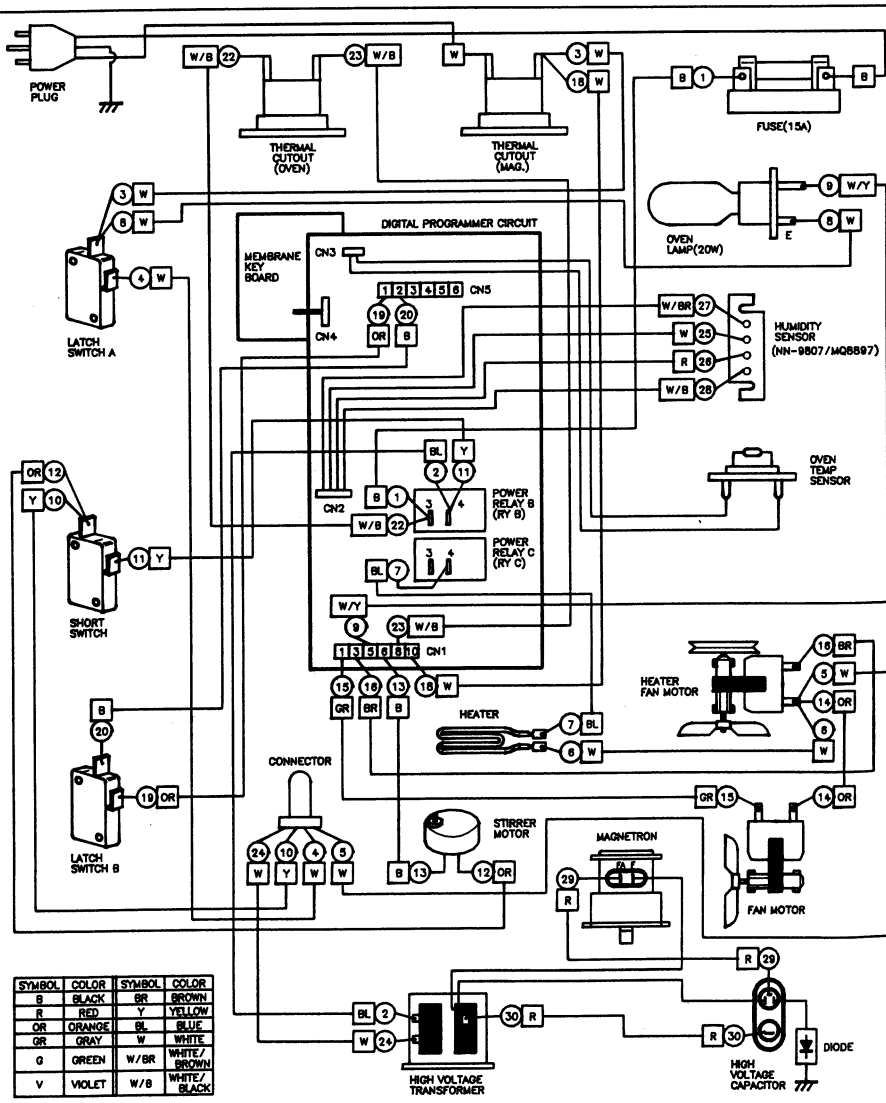

SYMBOL	COLOR	SYMBOL	COLOR
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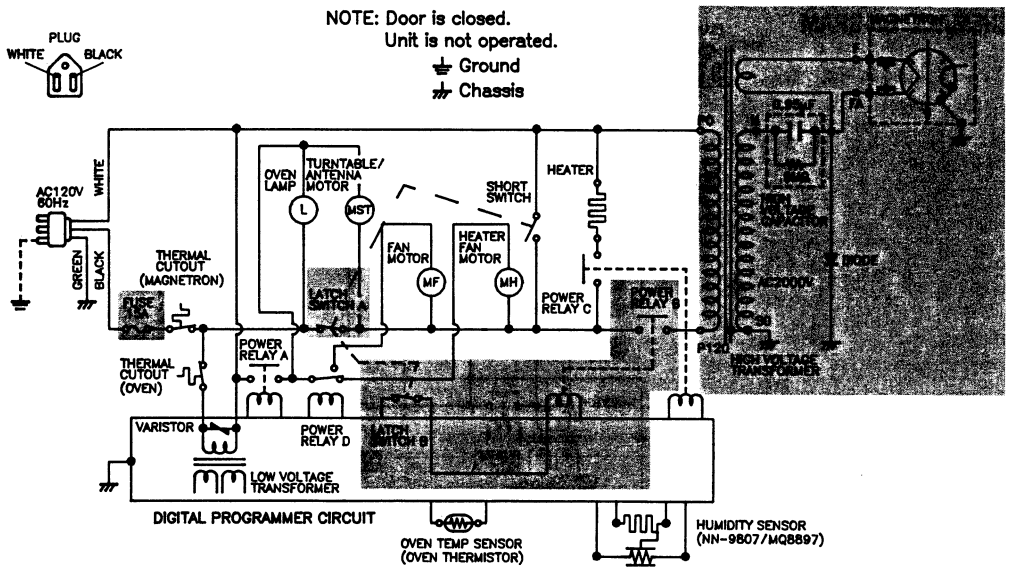
R	RED	Y	YELLOW
OR	ORANGE	BL	BLUE
GR	GRAY	W	WHITE
G	GREEN	W/BR	WHITE/ BROWN
V	VIOLET	W/B	WHITE/ BLACK

Fig. 1A

SCHEMATIC DIAGRAM (Canadian models)

SCHEMATIC DIAGRAM



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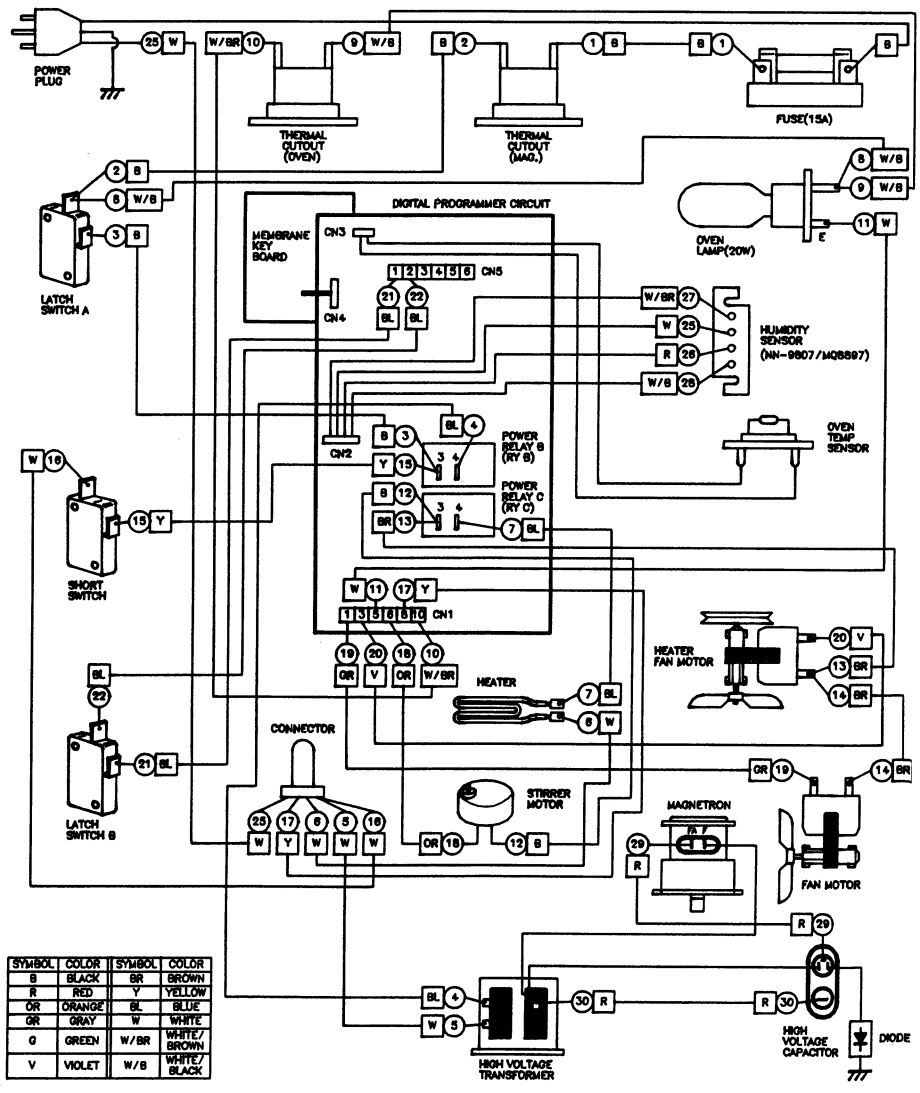


SYMBOL	COLOR	SYMBOL	COLOR
B	BLACK	BR	BROWN
R	RED	Y	YELLOW
OR	ORANGE	BL	BLUE
GR	GRAY	W	WHITE
G	GREEN	W/BR	WHITE/ BROWN
V	VIOLET	W/B	WHITE/ BLACK

Fig. 1B

DESCRIPTION OF OPERATING SEQUENCE

1. Variable power cooking control

The coil of power relay B (RYB) is energized intermittently by the digital programmer circuit, when the oven is set at any power selection except for High power position. The digital programmer circuit controls the ON-OFF time of power relay B contacts in order to vary the output power of the microwave oven from "Warm" to "High" power. One complete ON and OFF cycle of power relay B is 22 seconds.

The relation between indications on the control panel and the output of the microwave oven is as shown in **Fig. 2**

NOTE: The ON/OFF time ratio does not correspond with the percentage of microwave power since approximately 2 seconds are required for heating of magnetron filament.

2. Cyclic defrost

When defrost power and defrosting time are selected and Start pad is tapped:

(A) The digital programmer circuit (DPC) divides the total defrosting time into 8 equal periods, consisting of four defrosting periods, each followed by a standing periods. (See **Fig. 3**)

(B) During defrosting power periods, power relay B is energized for 9 seconds and de-energized for 13 seconds by DPC. (See **Fig. 4**)

(C) During standing periods, power relay B is always open resulting in no microwave power.

NOTE: Defrost time selected is converted into seconds by the DPC but display will show selected time in minutes and seconds as programmed. The total number of seconds is divided into 8 time periods. The remainder (seconds not equally divisible by 8) are added to the last standing time period.

Example 1: If defrosting time is selected for 2 minutes 56 seconds, each operating period will be as follows : (See **Fig. 5**)
2 minutes 56 seconds = 176 seconds
176/8 = 22

Example 2: If defrosting time is selected for 5 minutes, each operating period will be as follows : (See **Fig. 6**)
5 minutes = 300 seconds
300/8 = 37 and remainder is 4 seconds.
The 4 seconds is added to the last time period.

NOTE: When defrosting time is selected for not more than 7 seconds, the power relay B will not be energized at all.

INDICATION	OUTPUT POWER AGAINST HIGH POWER	ON, OFF TIME ON POWER RELAY B (RYB)
High	22/22 (700W)	22S ON, 22S ON
Med	17/22 (70%)	17S ON, 5S OFF
M. Low	13/22 (55%)	13S ON, 9S OFF
Low	8/22 (30%)	8S ON, 14S OFF
Warm	4/22 (15%)	4S ON, 18S OFF
Defrost	Approx 110W	Please refer to description of cyclic defrost.

Fig. 2

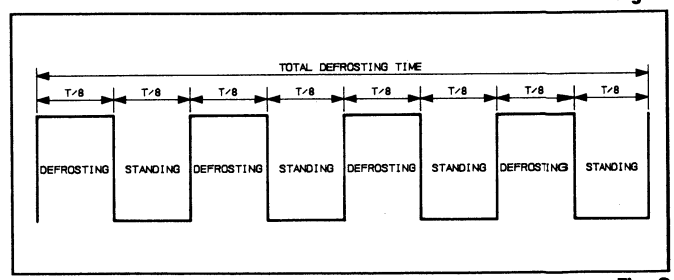


Fig. 3

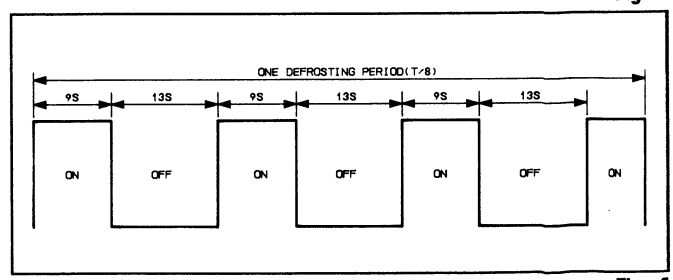


Fig. 4

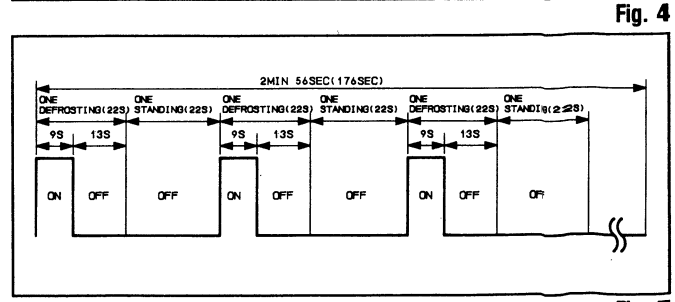


Fig. 5

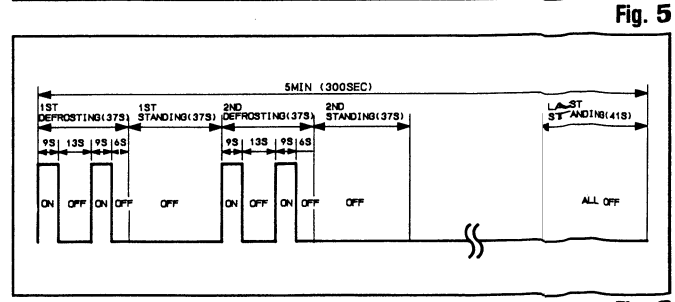


Fig. 6

3. Auto weight defrost control (NN-9807/9507)

Consists of the following pads :
- Auto Weight Defrost Pad
- Weight Pads
- Start Pad

When the Auto Weight Control, Defrost feature is selected by tapping the appropriate key pads and the Start Pad is tapped:

(A) The digital programmer circuit determines the power level and defrosting time to complete defrosting and indicates the operating state in the display window.
Fig. 7A shows the corresponding cooking times with respective weights.

(B) When cooking time in the display window has elapsed, the oven turns off automatically by the controlled signal from the digital programmer circuit.

3". Easy-Matic weight defrost control (MQ8897/8877)

Consists of the following pads :
- Weight Pads
- Start Pad

When the Easy-Matic Control, Defrost feature is selected by tapping the appropriate key pads and the start pad is tapped.

(A) The digital programmer circuit determines the power level and cooking time to complete defrosting and indicates the operating state in the display window.
Fig. 7B shows the corresponding defrosting times with respective weights.

(B) When defrosting time in the display window has elapsed, the oven turns off automatically by the controlled signal from the digital programmer circuit.

4. Auto weight frozen cook control (NN-9807/9507)

Consists of the following pads:
- Auto Weight Frozen Cook Pad
- Weight Pads
- Start Pad

When the Auto Weight Frozen Cook feature is selected and the Start Pad is tapped:

(A) The digital programmer circuit functions exactly the same as when Auto Weight Cook control is selected, except for some variations in cooking powers and cooking times.
Fig. 8 shows the cooking times for respective weights by categories.

5. Auto reheat control (NN-9507)

Consists of the following pads:
- Auto Reheat Control Pads (1-3)
- Start Pad

When the Auto Reheat Control feature is selected by tapping the appropriate key pads and the Start Pad is tapped.

(A) The digital programmer circuit determines the power level and cooking time to complete cooking and indicates the operating state in the display window.
Fig. 9A shows the corresponding cooking times with respective serving by categories.

(B) When cooking time in the display window has elapsed, the oven turns off automatically by a controll signal from the digital programmer circuit.

5". Easy-Matic reheat control (MQ8897/8877)

Consists of the following pads:
- Reheat Pad
- Start Pad

When the Easy-Matic Reheat feature is selected by tapping the appropriate key pad and the start pad is tapped;

(A) The digital programmer circuit determines the power level and cooking time automatically to complete cooking and indicates the operating state in the display window. **Fig. 9B** shows the corresponding cooking times with respective categories.

(B) When cooking time in the display window has elapsed, the oven turns off automatically by a control signal from the digital programmer circuit.

NN-9807/9507

WEIGHT SELECTED	TOTAL DEFROSTING TIME
1LB	12 min. 30 sec.
3LB	37 min. 30 sec.
5LB	1 hour 02 min.
12LB	2 hours 30 min.

Fig. 7A

MQ8897/8877

WEIGHT SELECTED	TOTAL DEFROSTING TIME
1LB	10 min. 00 sec.
3LB	30 min. 00 sec.
5LB	50 min. 00 sec.
12LB	1 hour 48 min.

Fig. 7B

NN-9807/9507

WEIGHT SELECTED	TOTAL COOKING TIME		
	CATEGORY 1	CATEGORY 2	CATEGORY 4
1 OZ	48 sec.	51 sec.	42 sec.
10 OZ	8 min. 00 sec.	8 min. 30 sec.	7 min. 00 sec.
16 OZ	12 min. 48 sec.	13 min. 36 sec.	11 min. 12 sec.
	CATEGORY 3	CATEGORY 5	
1 OZ	1 min. 00 sec.	45 sec.	
10 OZ	10 min. 00 sec.	7 min. 30 sec.	
20 OZ	16 min. 30 sec.	15 min. 00 sec.	
22 OZ	17 min. 42 sec.	16 min. 30 sec.	
32 OZ	23 min. 42 sec.	—	

Fig. 8

NN-9507

CATEGORY / SERVING	1	2	3
1	15 sec.	1 min. 00 sec.	1 min. 30 sec.
4	50 sec.	4 min. 00 sec.	10 min. 30 sec.

Fig. 9A

MQ8897/8877

CATEGORY	COOKING TIME
1	3 min. 00 sec.
2	1 min. 30 sec.
4	15 sec.

Fig. 9B

6. Convection cooking control

The digital programmer circuit controls the ON-OFF time of the heater in order to control oven cavity temperature.

(A) After the start pad is tapped with the desired convection program set, an 18V DC signal comes out of the digital programmer circuit and is applied to coil of power relay C (RYC).

(B) When the contacts of power relay B close, power source voltage (120V AC) is applied to the heater and the heater turns on.

(C) When the oven temperature reaches the set temperature, the digital programmer circuit senses the temperature through oven temp sensor and stops supplying an 18V DC signal to the coil of power relay C and the heater turns off.

(D) After the heater turns off, the oven temperature will continue increasing a while and then decrease as shown in **Fig. 10**. When the oven temperature drops below the set temperature, the digital programmer circuit senses the signal and starts supplying an 18V DC signal to the coil of power relay again.

NOTE: When Broil feature is selected, oven temperature is determined automatically by category as shown in Fig. 11.

7. Combination cooking control

Combination cooking is accomplished by microwave and convection cooking being done alternately during one combination cooking cycle. One combination cooking cycle is 22 seconds.

(A) During combination cooking, the digital programmer circuit controls ON-OFF time of both power relay B and C as shown in **Fig. 12**.

(B) When the power relay B (RYB) is turned on, heater turns off and after the power relay B turns off, power relay C turns on.

NOTE 1: Note that the heater may not be on during a heater on period if the preprogrammed oven temperature has been reached. This is due to the fact that the oven is keeping the preprogrammed oven temperature constant, so of course the heater will only be on when it is needed and off when it is not needed. (See Fig. 12)

NOTE 2: As for temperatures of combination cooking for convection, the temperatures by each program are preprogrammed in the microprocessor as shown in Fig. 13.

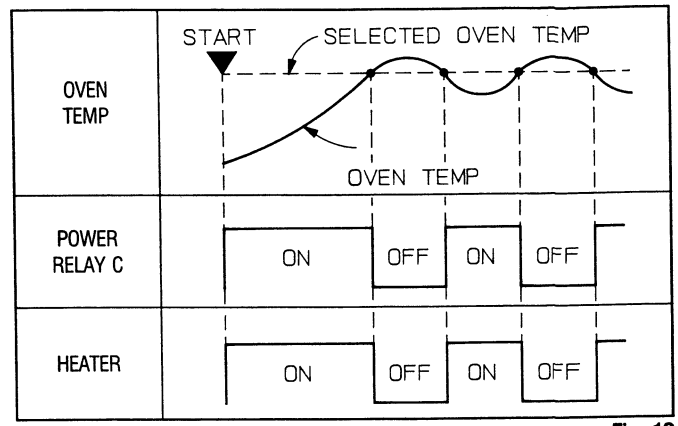


Fig. 10

CATEGORY	OVEN TEMP
1	475°F
2	450°F

Fig. 11

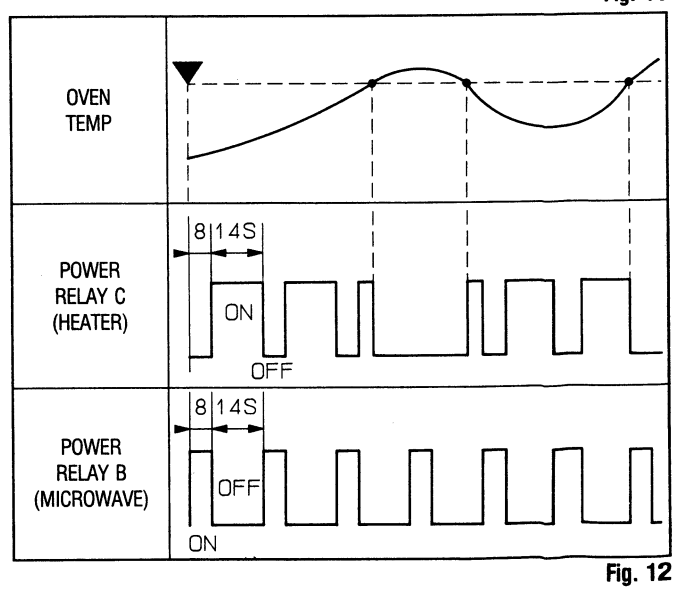


Fig. 12

CATEGORY	MICROWAVE	HEATER	OVEN TEMP
1	8/22 SEC	14/22 SEC	275°F
2	8/22 SEC	14/22 SEC	300°F
3	8/22 SEC	14/22 SEC	325°F
4	8/22 SEC	14/22 SEC	375°F

Fig. 13

8. Auto/Easy-Matic weight combination cooking control

Consists of following pads:

- Auto/Easy-Matic Weight Control, Combination Pad
- Weight Pads
- Start Pad

When the Auto/Easy-Matic Weight Control, Combination Cooking feature is selected by tapping the appropriate key pads and Start pad is tapped.

(A) The digital programmer circuit determines the power level, oven temperature and combination cooking time to complete combination cooking and indicates the operating state in the display window.
Fig. 14A and 14B shows the combination cooking times for respective weights.

(B) When the combination cooking time in the display window has elapsed, the oven turns off automatically by the controlled signal from the digital programmer circuit.

NN-9807/9507

WEIGHT SELECTED	TOTAL COMBINATION COOKING TIME			
	CATEGORY 1	CATEGORY 3	CATEGORY 5	CATEGORY 7
1 LB	17 min. 00 sec.	23 min. 00 sec.	21 min. 00 sec.	19 min. 00 sec.
3 LB	51 min. 00 sec.	1 hour 09 min.	1 hour 03 min.	57 min. 00 sec.
5 LB	1 hour 25 min.	1 hour 55 min.	—	1 hour 20 min.
12 LB	—	—	—	—

Fig. 14A

MQ8897/8877

WEIGHT SELECTED	TOTAL COMBINATION COOKING TIME			
	CATEGORY 1	CATEGORY 3	CATEGORY 6	CATEGORY 8
1 LB	15 min. 40 sec.	26 min. 20 sec.	20 min. 00 sec.	19 min. 40 sec.
3 LB	47 min. 00 sec.	1 hour 19 min.	1 hour 00 min.	54 min. 00 sec.
5 LB	1 hour 18 min.	2 hours 11 min.	—	1 hour 16 min.
12 LB	—	—	—	3 hours 00 min.

Fig. 14B

AUTO SENSOR/EASY-MATIC COOKING EXPLANATION, K FACTORS AND POWER LEVELS (NN-9807/MQ8897)

1. Auto sensor/Easy-Matic cooking

Auto sensor/Easy-Matic cooking is a revolutionary way to cook by microwave without setting a power level or selecting a time.
All that is necessary is to select an Auto Sensor/Easy-Matic Program before starting to cook.

Understanding of Auto Sensor/Easy-Matic Cooking

As a food cooks, a certain amount of steam is produced. If the food is covered, this steam builds up and eventually escapes from the container. In Auto Sensor/Easy-Matic Cooking, a carefully designed instrument, called the humidity sensor element, senses this escape of steam. Then, based upon the Auto Sensor/Easy-Matic Program selected, the unit will automatically determine the correct power level and the proper length of time it will take to cook the food.

NOTE: Auto Sensor/Easy-Matic Cooking is successful with the foods and recipes found in the Auto Sensor/Easy-Matic Cooking Guide. Because of the vast differences in food composition, items not mentioned in the Cooking Guide should be prepared in the microwave oven using power select and time features. Please consult Variable Power Microwave Cookbook for procedures.

2. Auto sensor/Easy-Matic cooking process

Explanation of the Auto Sensor/Easy-Matic Cooking process (See Fig. 15)

1) The shaded columns in both graphs indicate when the humidity sensor heater is on.
2) During the first 50 second period there is no microwave activity, and when calculating the T2 time by using the formula below make sure this 50 seconds is subtracted from the T1 time. In other words T1 time starts at the end of the 50 second period. (This 50 second period is needed for the sensor element to stabilize and balance itself to the humidity present before microwave activity starts.)
3) T1 time.....The total amount of time it takes the microwave oven to switch to T2 time after the 50 second period. During this time one of the Auto Sensor/Easy-Matic programs will be shown in display.
4) T2 time.....When the steam escapes from the cooking container placed in the oven, the humidity sensor detects it and the microprocessor calculates the balance of cooking time. This T2 time is then shown in the display and begins counting down.

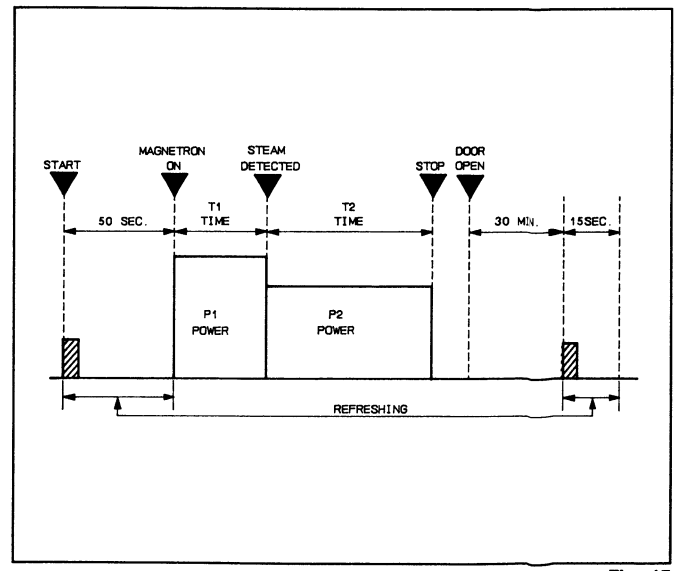


Fig. 15

Balance of cooking time (T2 time)

The balance of cooking time which is called T2 time, can be calculated by the following formula.

T2 time (in sec.) =T1 time × K factor

NOTE: Remember, the T1 time starts after the 50 second refreshing period. The coefficient K is programmed into the microprocessor memory and they are listed in the following tables along with the P1 and P2 powers. (See Fig. 16A and 16B)

NOTE: When "More" or "Less" pad is selected, the K factor varies as shown in Fig. 16A resulting in T2 time to be increased or decreased.···NN-9807

NOTE: When CUSTOM COOK pad is selected, the K factor varies as shown in Fig. 16B resulting in an increased or decreased T2 time.···MQ8897

Example 1: If the T1 time is measured to be 2 minutes and 40 seconds after the 50 second period, and the Auto Sensor program selected in COOK A3:

T2 = T1 × K
= 2 min. and 40 sec. × 2.5
= 160 sec. × 2.5
= 400 sec.
= 6 min. 40 sec.

Example 2: If the T1 time is measured to be 15 minutes and 30 seconds after the 50 second period, and the Easy-Matic program selected in COOK 4:

T2 = T1 × K
= 15 min. and 30 sec. × 0.7
= 930 sec. × 0.7
= 651 sec.
= 10 min. and 51 sec.

NOTE: If using a calculator please remember the calculator rounds off in decimal numbers, so the T2 time will come out slightly different than if seconds are changed back to minutes by regular long division. When using a calculator, simply multiply the tenths by 60 to get the correct number of seconds.
For instance take the T2 time in seconds from Example 2 above. Using the calculator divide 60 into 651 and the quotient will be 10.85. Then multiply 0.85 by 60 and the product will be 51 seconds.

NN-9807

COOK					
	P1 Power	P2 Power	K factor		
			Standard	More	Less
A1	HIGH	——	0	0	0
A3	MED	M. LOW	2.5	approx. 3.0	approx. 2.0
A5	MED	MED	1.0	approx. 1.2	approx. 0.8
A7	MED	LOW	0.2	approx. 0.3	approx. 0.1

Fig. 16A

MQ8897

COOK					
	P1 Power	P2 Power	K factor		
			Standard	More	Less
2	HIGH	M. LOW	0.2	approx. 0.3	approx. 0.1
4	HIGH	M. LOW	0.7	approx. 0.8	approx. 0.6
6	MED	MED	0.5	approx. 0.6	approx. 0.4
8	HIGH	——	0	0	0
FROZEN FOODS					
1	MED	MED	0.3	approx. 0.4	approx. 0.2
3	MED	——	0	0	0

Fig. 16B

CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING

Unlike many other appliances, the microwave oven is high-voltage, high-current equipment. Though it is free from danger in ordinary use, extreme care should be taken during repair.

CAUTION

Servicemen should remove their watches whenever working close to or replacing the magnetron.

1. Check the grounding

Do not operate on a 2-wire extension cord. The microwave oven is designed to be used when grounded. It is imperative, therefore, to make sure it is grounded properly before beginning repair work.

2. Warning about the electric charge in the high voltage capacitor (Fig. 17)

For about 30 seconds after the oven is turned off, an electric charge remains in the high voltage capacitor.
When replacing or checking parts, remove the power plug from the outlet and short the terminal of the high voltage capacitor (terminal of lead wire from diode) to chassis ground with an insulated handle screwdriver or insulated jumper lead wire to discharge.

WARNING

There is high-voltage present, with high-current capabilities in the circuits of the high voltage winding and filament winding of the high voltage transformer. It is extremely dangerous to work on or near these circuits with oven energized.
DO NOT measure the voltage in the high voltage circuit including filament voltage of magnetron.

WARNING

Never touch any circuit wiring with your hand nor with an insulated tool during operation.

3. When parts must be replaced, remove the power plug from the outlet.

4. When the 15 Amp fuse is blown due to the operation of short switch:

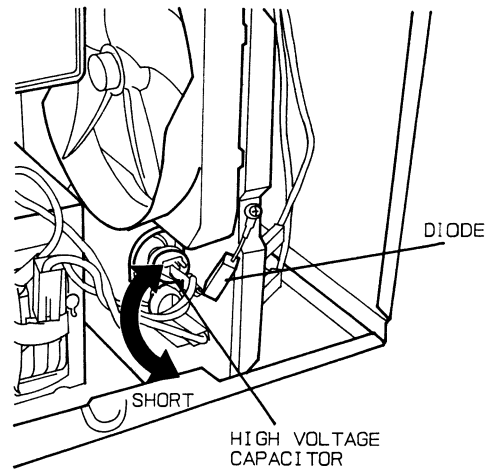
WARNING

When the 15 Amp. fuse is blown due to the operation of short switch, you must replace latch switch A and short switch. For U.S.A. models, also replace power relay B when the continuity check reads shorted contacts (3-4).

(A) This is mandatory. Refer to page 25 for the necessary adjustments for these switches.
(B) When replacing the fuse, confirm that it has the appropriate rating for these models.
(C) When replacing faulty switches, be sure mounting tabs are not bent, broken or otherwise deficient in their ability to hold the switches.

5. Avoid inserting nails, wire, etc. through any holes in the unit during operation.

Never insert a wire, nail or any other metal object through the lamp holes on the cavity or any other holes or gaps, because such objects may work as an antenna and cause microwave leakage.



Touch chassis side first then short to the high voltage capacitor terminal.

Fig. 17

6. Confirm after repair

(A) After repair or replacement of parts, make sure that the screws of the oven, etc. are neither loose nor missing.
Microwaves might leak if screws are not properly tightened.
(B) Make sure that all electrical connections are tight before inserting the plug into the wall outlet.
(C) Check for microwave energy leakage. (Refer to procedure for measuring microwave energy leakage on page 26.)

DISASSEMBLY AND PARTS REPLACEMENT PROCEDURE

1. Replacement of the magnetron

CAUTION

Servicemen should remove their watches whenever working close to or replacing the magnetron.

Removal of positive lock connector.
The positive lock connector is a specially designed locking connector and you will find this connector in many lead wire connections. To remove this connector, pull the lead wire by pressing an extruded lever in the center of receptacle terminal as shown in **Fig. 18**.

(A) Discharge the high voltage capacitor. (see page 16)
(B) Remove 2 screws holding magnetron thermal cutout. (**Fig. 19**)
(C) Remove 3 screws holding air guide A and detach the air guide A. (**Fig. 19**)
(D) Disconnect 2 high voltage lead wires from magnetron filament terminals (**Fig. 19**)
(E) Remove 4 screws holding the magnetron. (**Fig. 19**)
NOTE: After replacement of the magnetron, tighten mounting screws properly making sure there is no gap between the waveguide and the magnetron to prevent microwave leakage.

CAUTION

When connecting 2 filament lead wires to the magnetron terminals, be sure to connect the lead wires in the correct position. The lead wire of high voltage transformer should be connected to "F terminal" and the lead wire from high voltage capacitor should be connected to "FA terminal". (See **Fig. 19**)

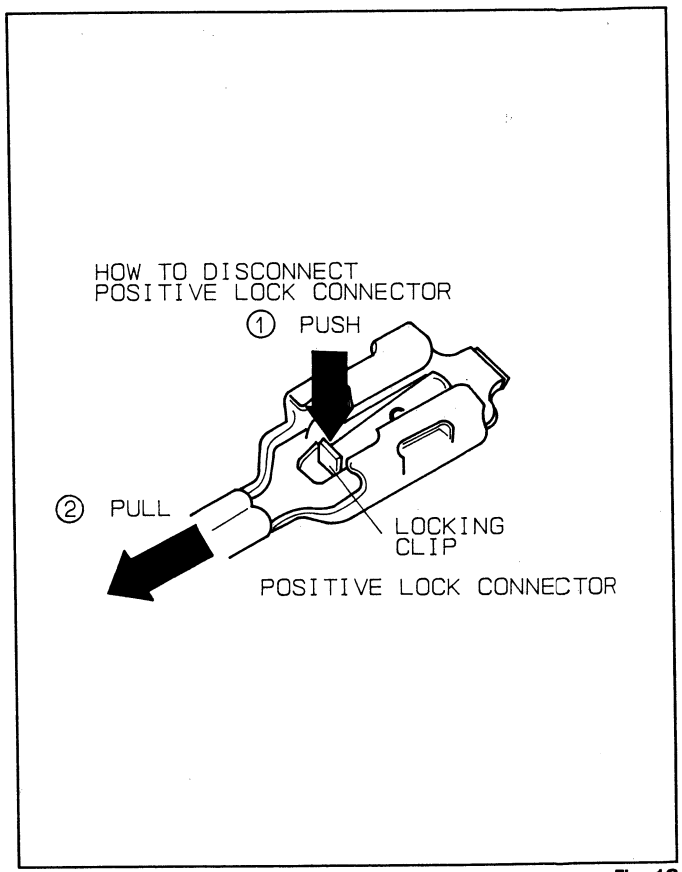


Fig. 18

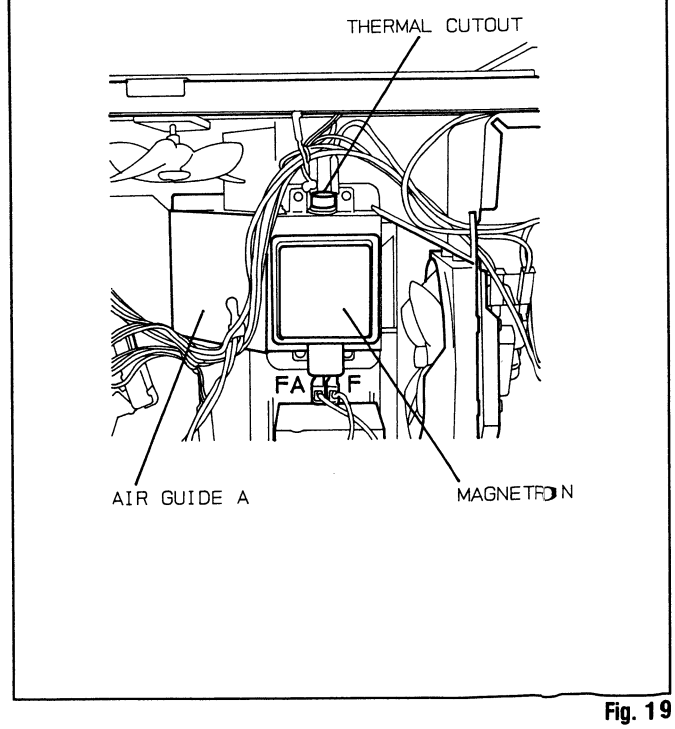


Fig. 19

2. Replacement of the digital programmer circuit (DPC) and membrane key board.

NOTE: Be sure to ground any static electric charge built up on your body, before handling the DPC.

(A) Disconnect 2 connectors from power relay B (RYB) and power relay C (RYC). **(Fig. 20)**

(B) Disconnect CN1, CN2, CN3 and CN5 connectors from DPC. **(Fig. 20)**

(C) Remove 2 screws holding escutcheon base to the oven assembly. **(Fig. 19)**

(D) Remove the escutcheon base by freeing 2 catch hooks on the top and right sides escutcheon base.

(E) Release CN4 connector's lid of DPC by pushing lever to inside and pull it upward, and remove flat cable of membrane key board. **(Fig. 21)**

(F) Remove 4 screws holding DPC. **(Fig. 21)**

To replace membrane key board

(G) Remove 2 screws holding escutcheon bracket to the escutcheon base. **(Fig. 21)**

(H) Peel off the membrane key board from the escutcheon base. **(Fig. 22)**

NOTE: The membrane key board is attached to the escutcheon bracket with double faced adhesive tape.

NOTE: When installing new membrane key board, make sure that the surface of escutcheon bracket is cleaned sufficiently so that any problems (shorted contacts or uneven surface) can be avoided.

NOTE: Make sure that new membrane key board is aligned to the left and lower eddes of the escutcheon bracket. (Fig. 22)

3. Replacement of the low voltage transformer and/or power relays (RYA/RYB/RYC)

NOTE: Be sure to ground any static electric charge built up on your body before handling the DPC.

(A) Using solder wick or a desoldering tool and 30W soldering iron, carefully remove all solder from the terminal pins of the low voltage transformer and/or power relays.

NOTE: Do not use a soldering iron or desoldering tool of more than 30 watts on DPC contacts.

(B) With all the terminal pins cleaned and separated from DPC contacts, remove the defective transformer/power relays and install new transformer/power relays making sure all terminal pins are inserted completely. Resolder all terminal contacts carefully.

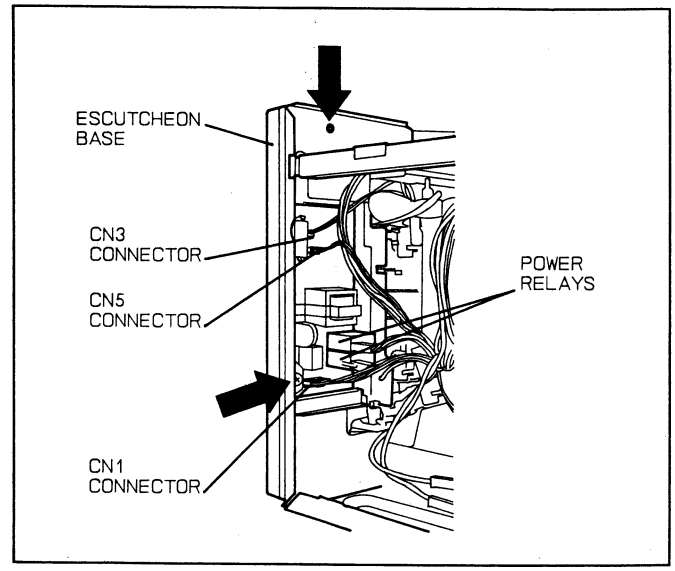


Fig. 20

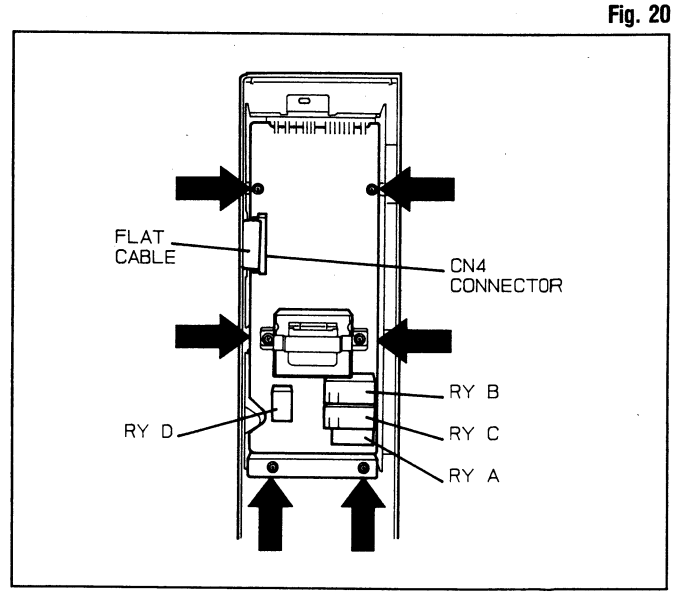


Fig. 21

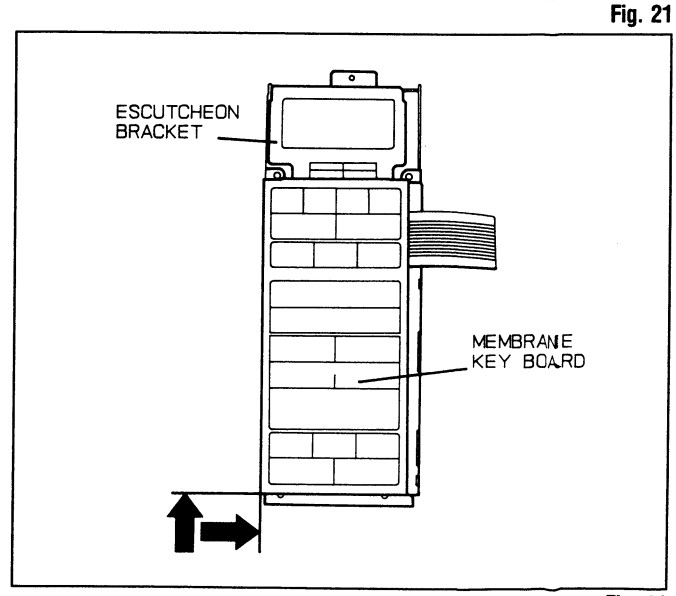


Fig. 22

4. Replacement of the fan motor and high voltage capacitor.

(A) Disconnect 2 lead wires from fan motor terminals. **(Fig. 23)**
(B) Disconnect 2 lead wires from fuse holder terminals. **(Fig. 23)**
(C) Disconnect 4 high voltage lead wires from high voltage capacitor terminals. **(Fig. 23)**
(D) Remove 1 screw holding oven reinforcement bracket. **(Fig. 23)**
(E) Remove 3 screws holding fan motor bracket and detach the fan motor bracket with fan motor from oven assy. **(Fig. 23)**
(F) Remove fan blade from the fan motor shaft by pulling it straight out. **(Fig. 24)**
(G) Remove 2 screws holding the fan motor to the fan motor bracket. **(Fig. 24)**

To replace high voltage capacitor

(H) Remove 1 screw holding high voltage capacitor. **(Fig. 24)**

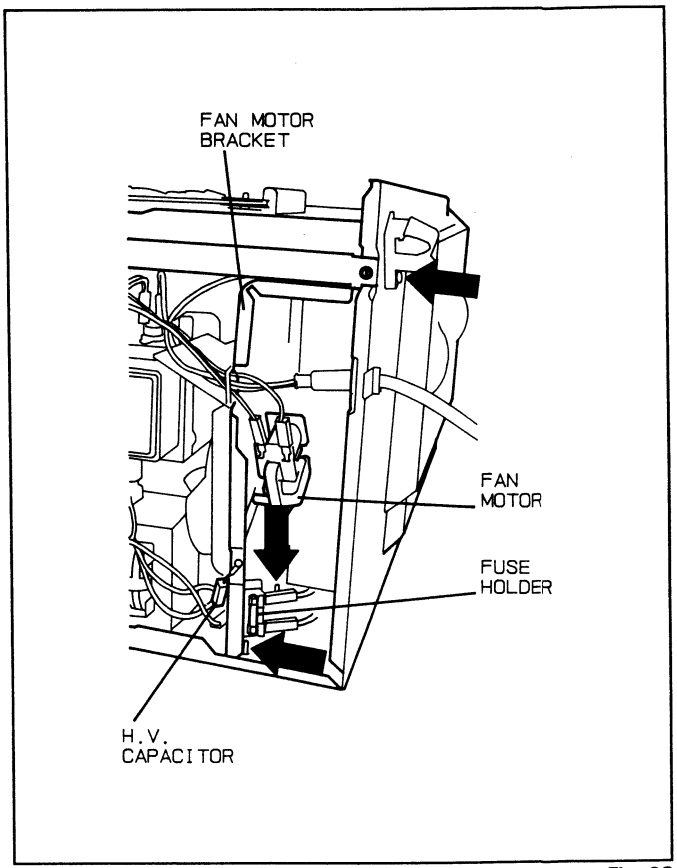


Fig. 23

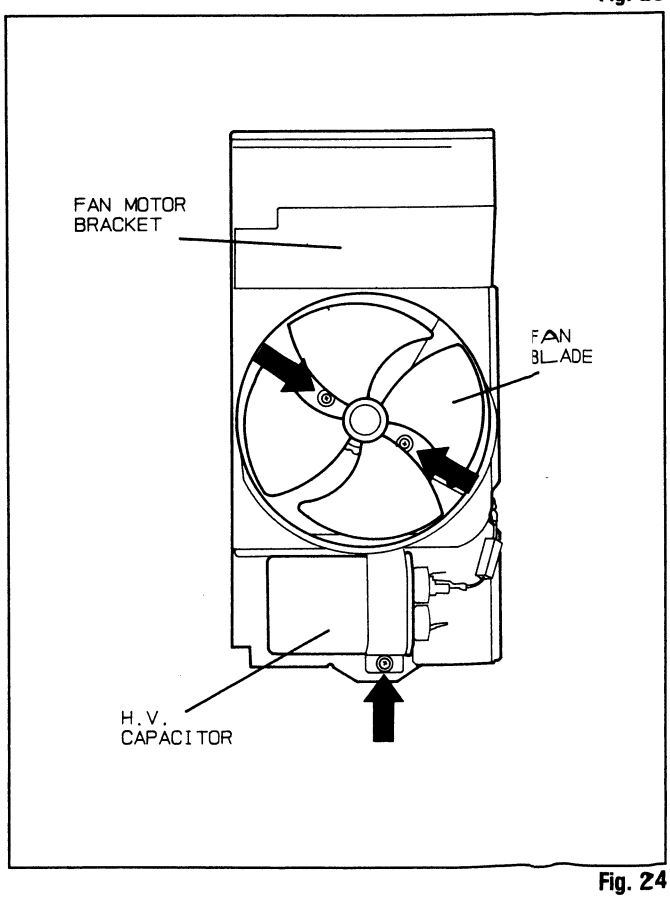


Fig. 24

5. Replacement of the heater

(A) Remove lead wires from lead wire holders. **(Fig. 26)**
(B) Remove belt from pulleys of circulation fan. **(Fig. 26)**
(C) Remove 2 screws holding oven temp sensor. **(Fig. 26)**
(D) Remove 2 lead wires from heater terminals by removing screws. **(Fig. 27)**
(E) Remove 6 screws holding the both sides of heater unit and lift it up carefully. **(Fig. 26)**
(F) Remove 2 spring nuts from heater terminals. **(Fig. 27)**
(G) Remove 2 screws holding heater supports and detach the heater. **(Fig. 28)**

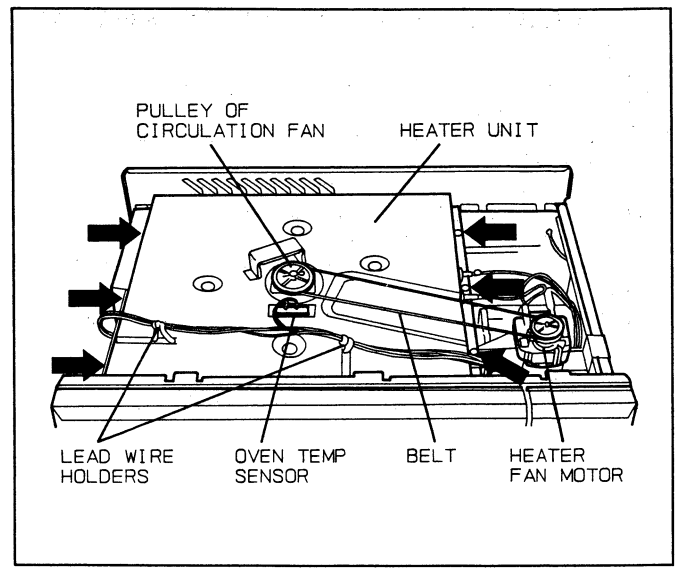


Fig. 26

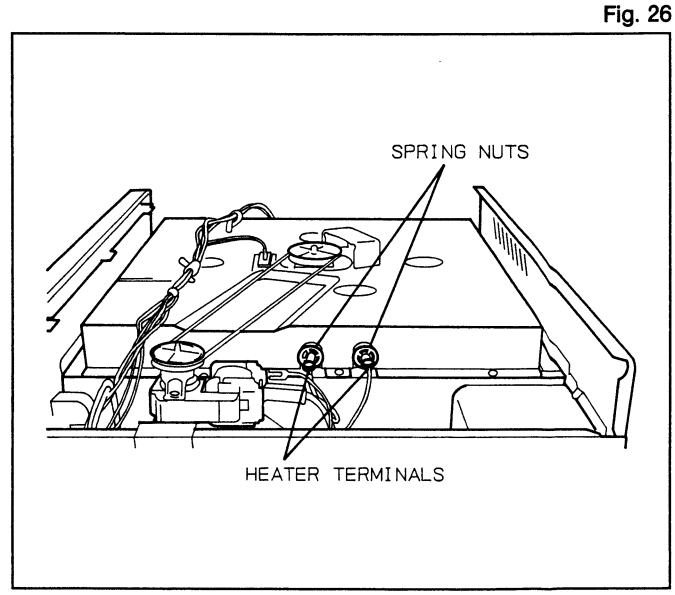


Fig. 27

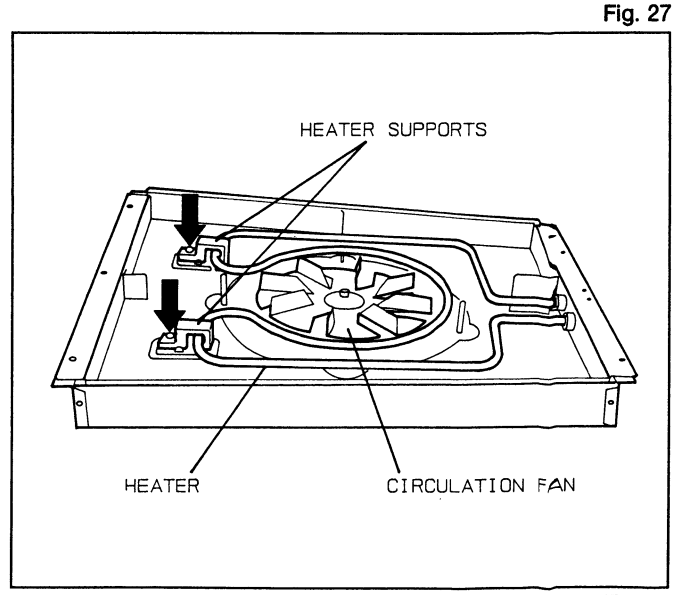


Fig. 28

6. Disassembly of the door assembly

(A) Open the door and remove 4 screws holding door C. **(Fig. 29)**
(B) Remove the door C from door E by carefully pulling outward starting from upper right hand corner. **(Fig. 29)**
(C) Remove door key spring and remove 3 screws holding door handle. **(Fig. 30)**
(D) Separate the door A from the door E by freeing 6 catch hooks on the door A. **(Fig. 31)**
(E) Remove door keys, door key lever, door key spring and door key pins. **(Fig. 30)**

7. Replacement of the turntable/antenna motor.

(A) Lay the oven on its top as illastrated in **Fig. 32**.
(B) Remove 2 screws holding motor cover. **(Fig. 32)**
(C) Disconnect 2 lead wires from turntable/antenna motor. **(Fig. 33)**.
(E) Remove 2 screws holding turntable/antenna motor. **(Fig. 33)**.

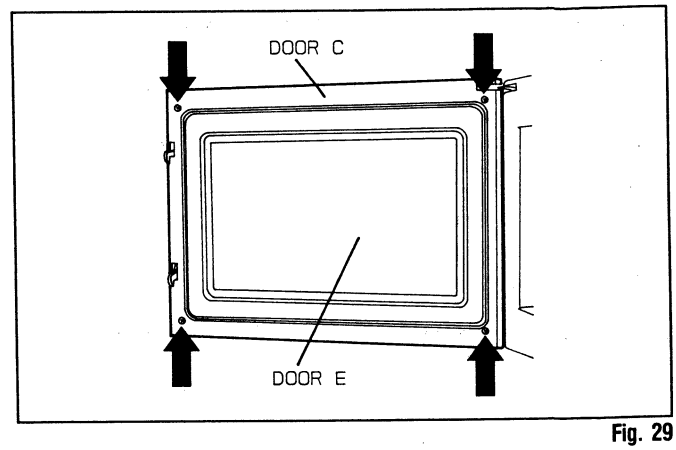


Fig. 29

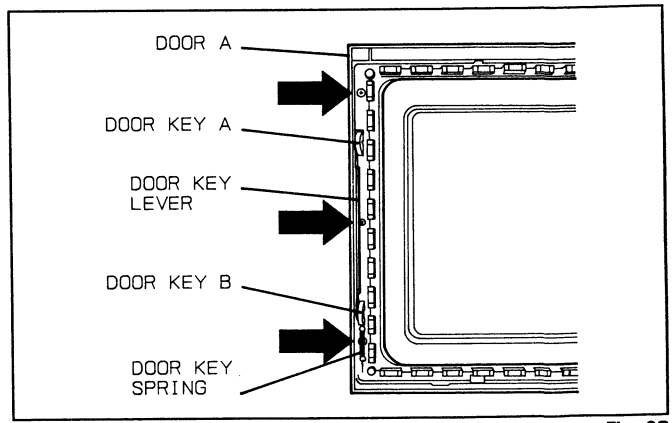


Fig. 30

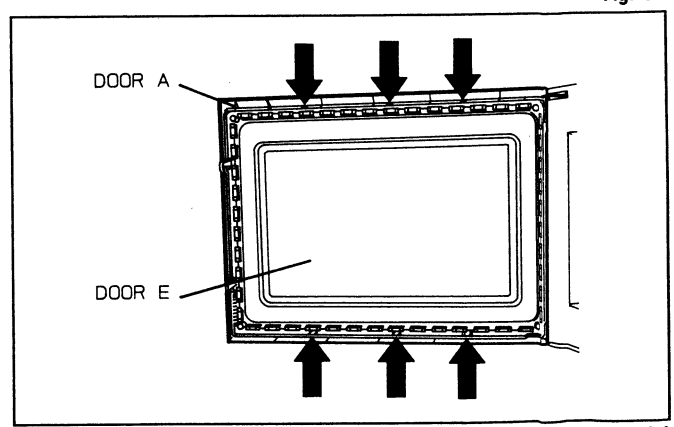


Fig. 31

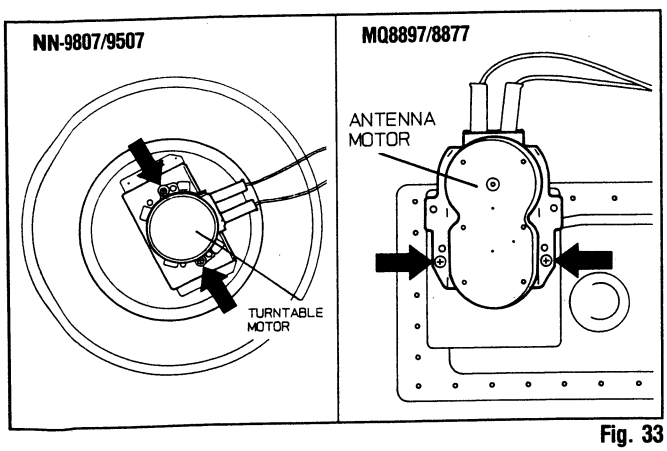


Fig. 33

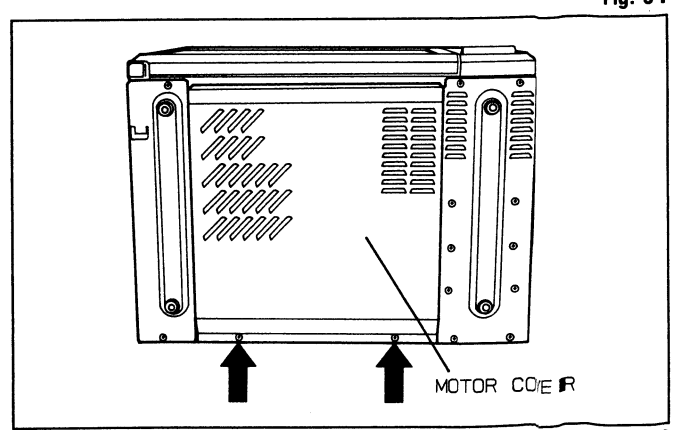


Fig. 32

8. Replacemant of the floor shelf and/or moving antenna. (MQ8897/8877)

(A) Bend metal cover which covers the floor shelf removal opening located on left side oven wall and insert a phillips type screwdriver or equivalent approx.3" (7.5 cm) in shaft length in the hole. (**Fig. 34**)

(B) Carefully lift up the floor shelf by using the screwdriver until the floor shelf is lifted up over the level of oven opening front. (**Fig. 35**)

(C) Remove the floor shelf by lifting it up from oven front.

To replace the moving antenna.

(D) Remove the moving antenna by simply lifting it up off the antenna motor shaft. (**Fig. 36**)

NOTE: When replacing the moving antenna, make sure the plastic antenna spacers are correctly in place.

(E) When installing floor shelf in position, make sure that front edge side of the floor shelf is inserted in position first then press down the rear side.

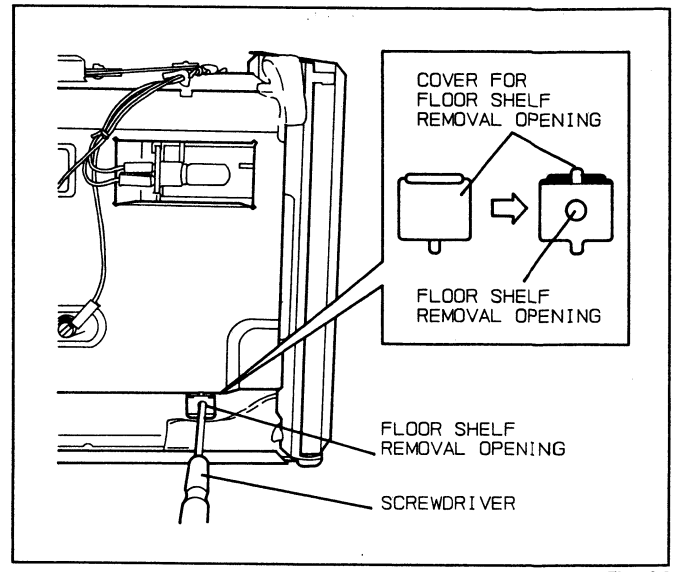


Fig. 34

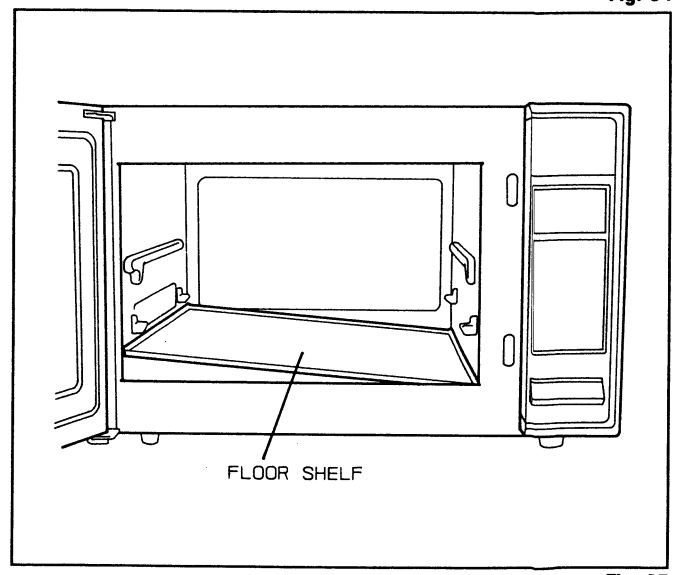


Fig. 35

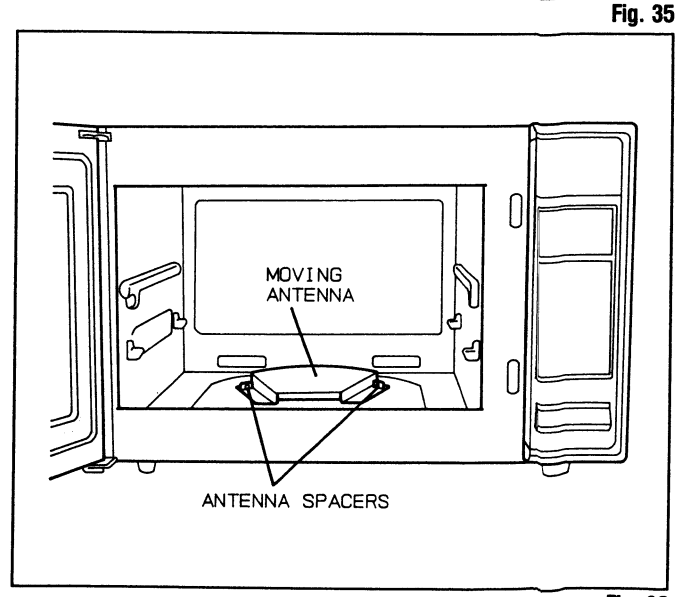


Fig. 36

COMPONENT TEST PROCEDURE

CAUTION

1. High voltage is present at the high voltage terminal of the high voltage transformer during any cook cycle.
2. It is neither necessary nor advisable to attempt measurement of the high voltage.
3. Before touching any oven components, or wiring, always unplug the oven from its power source and discharge the high voltage capacitor. (See page 16.)

1. High voltage transformer (See Fig. 37)

(A) Remove connections from the transformer terminals and check continuity.
(B) Normal (cold) resistance readings should be as follows:

Secondary winding	Approx. 80Ω ~ 120Ω
Filament winding	Approx. 0Ω
Primary winding	Approx. 0Ω ~ 1Ω

2. High voltage capacitor

(A) Check continuity of capacitor with meter on highest OHM scale.
(B) A normal capacitor will show continuity for a short time, and then indicate 9MΩ once the capacitor is charged.
(C) A shorted capacitor will show continuous continuity.
(D) An open capacitor will show constant 9MΩ.
(E) Resistance between each terminal and chassis should be infinite.

3. Diode

(A) Isolate the diode from the circuit by disconnecting the leads.
(B) With the ohmmeter set on the highest resistance scale, measure the resistance across the diode terminals. Reverse the meter leads and again observe the resistance reading. Meter with 6V, 9V or higher voltage batteries should be used to check the front-to-back resistance of the diode, otherwise an infinite resistance may be read in both directions. A normal diode's resistance will be infinite in one direction and several hundred kΩ in the other direction.

4. Magnetron (See Fig. 38)

Continuity checks can only indicate an open filament or a shorted magnetron. To diagnose for an open filament or shorted magnetron.
(A) Isolate magnetron from the circuit by disconnecting the leads.
(B) A continuity check across magnetron filament terminals should indicate one ohm or less.
(C) A continuity check between each filament terminal and magnetron case should read open.

5. Membrane key board (Membrane switch assembly)

Check continuity between switch terminals, by tapping an appropriate pad on the key board. The contacts assignment of the respective pads on the key board is as shown in **Fig. 39A and 39B.**

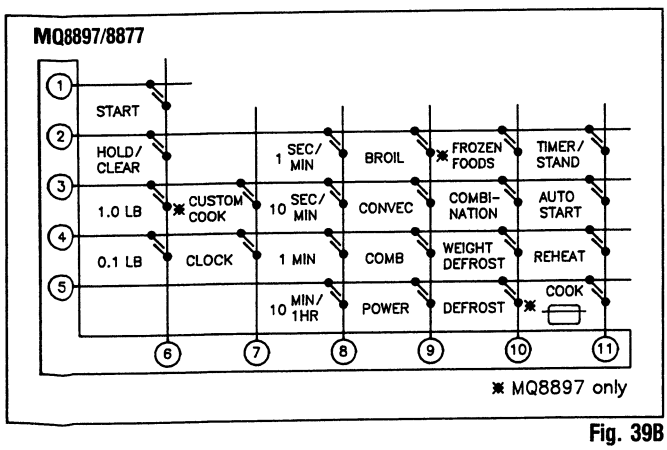


Fig. 39B

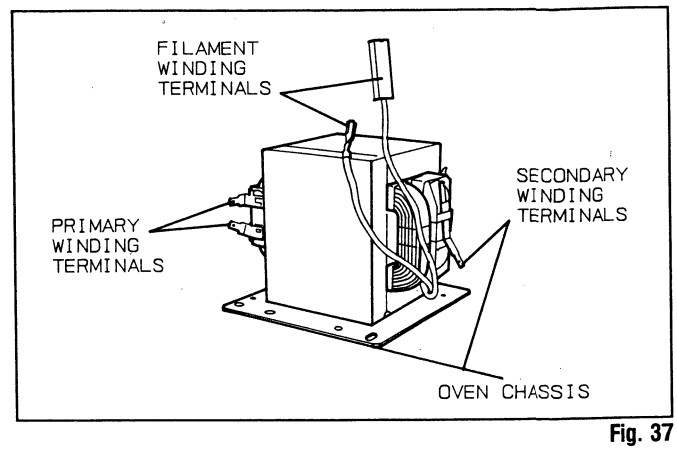


Fig. 37

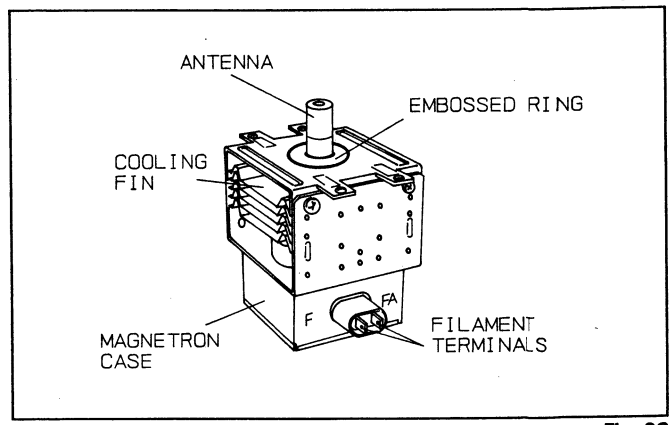


Fig. 38

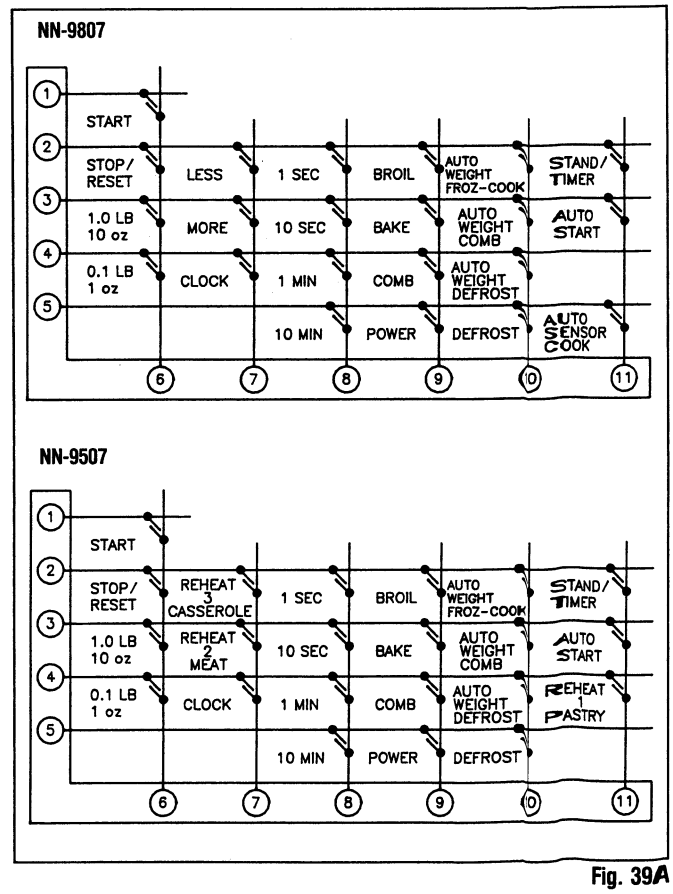


Fig. 39A

6. Humidity sensor and digital programmer circuit (Fig. 40) (NN-9807/MQ8897)

CAUTION

Do not touch any parts of the circuitry on the digital programmer circuit since static electric discharge may damage this control panel.
Always ground yourself while working on this panel to discharge any static charge built up on your body.

(A) Check across sensor heater terminals. Normal cold resistance should read approx. 6 ohm.
(B) In order to determine if the Auto Sensor/Easy-Matic Cooking function of the digital programmer circuit is in working order or not, do the following test.
1) Place a water load in the oven.
2) Unsolder red and white wires connected to sensor terminals.
3) Tap Auto Sensor Cook Control Pad once for set auto sensor cooking at A1 and tap Start Pad.···NN-9807
3") Tap Easy-Matic Cooking Control Pad eight times for set Easy-Matic Cooking at 8 and tap Start Pad.···MQ8897
4) About 10 seconds after Start Pad is tapped short red and white wires for 5 seconds and then remove them. Before shorting the red and white wires you can watch the sensor heater glow red.
5) The oven lamp will dim a little, about 50 seconds after the Start Pad is tapped. This indicates that magnetron has started oscillation.
6) 10 seconds after magnetron oscillation, short the shielded wires again. The oven should turn off automatically when the red and white wires are shorted.

The Auto Sensor/Easy-Matic Cooking function in the digital programmer circuit is in working order if above condition is obtained.

7. To test the oven temp sensor thermistor

This sensor monitors the heat produced by the heater circuit and maintains the oven temperature the user had selected normal room temperature, especially in a kitchen can vary anywhere from 50°F to 90°F. The reading across the oven sensor thermistor should be within 360K ohm to 800K ohm when read in an area within the 50°F to 90°F room temperature range.
If the resistance reading is out of the range stated here, the sensor is detective and must be replaced.

NOTE 1: When measuring resistance disconnect the CN3 connector from the DPC otherwise a false reading may be indicated.

NOTE 2: If checking an oven sensor thermistor just after the microwave oven has been operating, the sensor of course won't be room temperature. In this case the sensor must be removed and allowed to cool down to the 50°F to 90°F range.

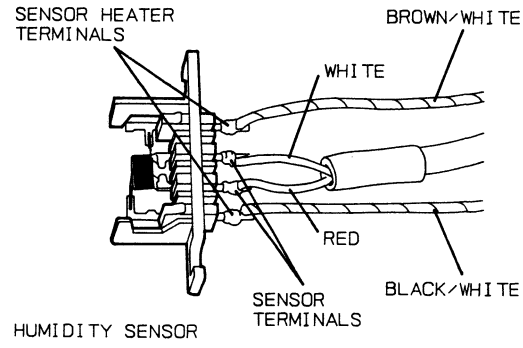


Fig. 40

MEASUREMENTS AND ADJUSTMENTS

WARNING

For continued protection against radiation hazard, replace only with identical replacement parts (Part No. ANE61424L0AG, Type No. V-16G-3C26 for latch switch A and B and Part No. ANE61784L0AG, Type No. V-16G-2C25 for short switch).
When the 15 Amp. fuse is blown due to the operation of short switch, you must replace latch switch A and short switch. For U.S.A. models, also replace power relay B when the continuity check reads shorted contacts (3-4). Then follow the adjustment procedures below.
Interlock switch replacement — In replacing faulty switches, be sure mounting tabs are not bent, broken or otherwise deficient in their ability to hold the switches.

1. Adjustment of latch switch A, latch switch B and short switch

(A) When mounting latch switch A, latch switch B and short switch to door hook assembly, mount the latch switch A, the latch switch B and the short switch to the door hook assembly as shown in **Fig. 41.**

NOTE: No specific adjustment during installation of latch switch A, latch switch B and short switch to the door hook is necessary.

(B) When mounting the door hook assembly to the oven assembly, adjust the door hook assembly by moving it in the direction of arrow in **Fig. 42** so that the oven door will not have any play in it. Check for play in the door by pulling the door assembly. Make sure that the latch keys move smoothly after adjustment is completed. Completely tighten the screws holding the door hook assembly to the oven assembly.

2. Measurement of microwave output

The power output of the magnetron can be determined by performing a simple water heating test as described below.
Necessary Equipment:
*Two 1 liter beakers *Glass thermometer
*Wrist watch or stopwatch

NOTE: Check the line voltage under load. Low voltage will lower the magnetron output. Take the temperature readings and heating time as accurate as possible.

(A) Fill each beaker with exactly one liter of tap water. Stir the water using the thermometer and record each beaker's temperature (recorded as T1A and T1B).

(B) Place both beakers on the center of cook plate.
Set the oven for High power and heat it for exactly two minutes.

(C) Stir the water again and read the temperature of each beaker (recorded as T2A and T2B).

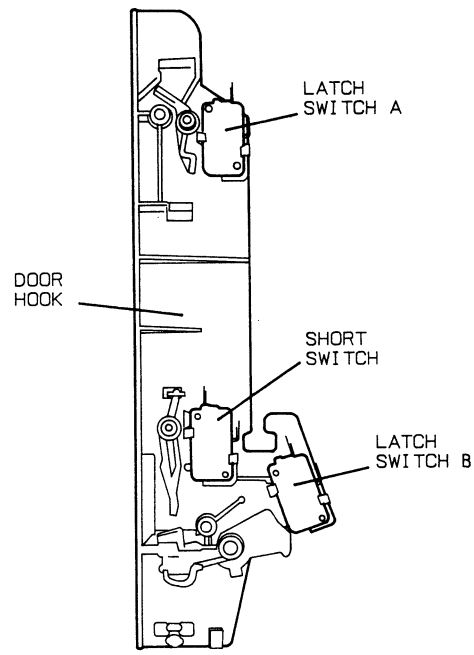
(D) Obtain the temperature rise by using the following formula:

$$\text{Average temperature rise} = \frac{(T2A + T2B) - (T1A + T1B)}{2}$$

The normal temperature rise for these models should be 16° to 20°F (8.9° to 11°C) at the "High" power selection with the oven operating at the specified line voltage.

(E) To obtain the power output, multiply the average temperature rise by 39 (or 70 if thermometer is in Celsius).
Example:
If you find average temperature rise of 18°F, the ovens output is
18 × 39 = 702 watts.

NOTE: This test may be conducted by heating one liter of water for one minute if only one beaker is available. In this instance you will find the temperature rise being smaller than the above specifications due to the microwave absorption characteristic. You may judge the magnetron to be normal when the temperature rise is greater than 13.5°F (or 7.5°C).



Please confirm that the gap between the switch housing and switch actuator levers is no more than 1.0mm when the door is closed.

Fig. 41

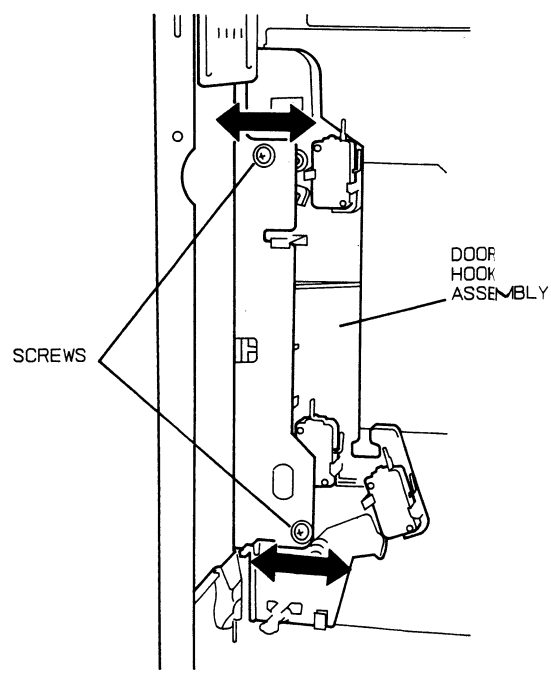


Fig. 42

PROCEDURE FOR MEASURING MICROWAVE ENERGY LEAKAGE

WARNING

Check for radiation leakage after every servicing. Should the leakage be more than 2 mW/cm² (1mW/cm² for Canada) inform the MSC, PHI, PSC, or MELCA immediately. After repairing or replacing any radiation safety device, keep a written record for future reference, as required by D.H.H.S and NHW regulation. This required must be strictly observed. In addition, the leakage reading must be recorded on the service repair ticket while in the customer's home.

NOTE: The U.S. government standard is 5 mW/cm² while in the customer's home. 2mW/cm² stated here is our own voluntary standard. (1mW/cm² for Canada)

1. Equipment

*Electromagnetic radiation monitor
*Glass thermometer 212°F or 100°C
*600cc glass beaker

2. Procedure for measuring radiation leakage.

Note before measuring

(1) Do not exceed meter full scale deflection. Leakage monitor should initially be set to the highest scale.

*(2) To prevent false readings the test probe should be held by the grip portion of the handle only and moved along the shaded area shown in **Fig. 44** no faster than 1 inch/sec (2.5 cm/sec)*

(3) Leakage with the outer panel removed·····less than 5mW/cm²

(4) Leakage for a fully assembled oven with door normally closed····· less than 2mW/cm² (1mW/cm² for Canada)

(5) Leakage for a fully assembled oven [Before the latch switch (primary) is interrupted] while pulling the door ·····less than 2mW/cm²

(A) Pour 275 ± 15cc (9ozs ± 1/2oz) of 20 ±5°C (68 ± 9°F) water in a beaker which is graduated to 600cc, and place the beaker in the center of the oven.

(B) Set the radiation monitor to 2450MHz and use it following the manufacturer's recommended test procedure to assure correct results.

(C) When measuring the leakage, always use the 2 inch (5cm) spacer supplied with the probe.

(D) Tap the start pad with the magnetron oscillating, measure the leakage by holding the probe perpendicular to the surface being measured.

(1) Measurement with the outer panel removed.

Whenever you replace the magnetron, measure for radiation leakage before the outer panel is installed and after all necessary components are replaced or adjusted. Special care should be taken in measuring around the magnetron. **(Fig. 43)**

WARNING

Avoid contacting any high voltage parts.

(2) Measurements with a fully assembled oven. (Fig. 44)

After all components, including the outer panel are fully assembled, measure for radiation leakage around the door periphery, the door viewing window, the exhaust opening and air inlet openings.

3. Record keeping and notification after measurement

(A) After any adjustment or repair to a microwave oven, a leakage reading must be taken. Record this leakage reading on the repair ticket even if it is zero.

A copy of this repair ticket and the microwave leakage reading should be kept by repair facility.

(B) Should the radiation leakage be more than 2 mW/cm² (1mW/cm² for Canada) after determining that all parts are in good condition, functioning properly, and genuine replacement parts as listed in this manual have been used, immediately notify the MSC, PHI, PSC or MELCA.

4. At least once a year, have the radiation monitor checked for calibration by its manufacturer.

WARNING

AVOID CONTACTING ANY HIGH VOLTAGE PARTS.

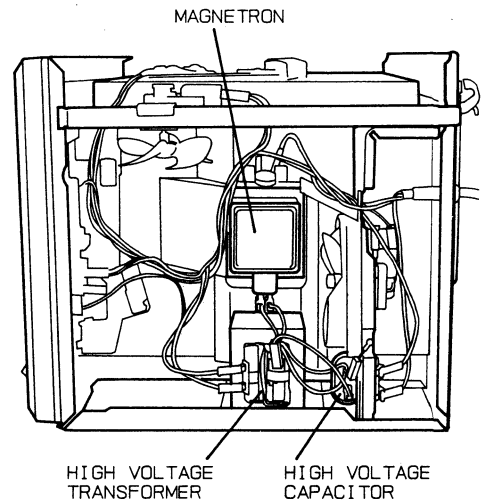
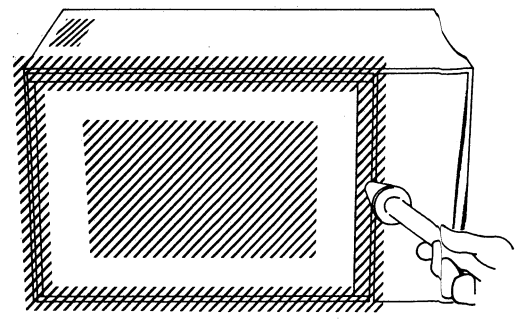


Fig. 43



MOVE PROBE ALONG SHADED AREA (////) AROUND EXHAUST OPENINGS (as shown) AND AROUND AIR INLET OPENING

Fig. 44

TROUBLESHOOTING GUIDE

CAUTION

1. Check grounding before checking for trouble.
2. Be careful of the high voltage circuit.
3. Discharge high voltage capacitor. (See page 16.)
4. When checking the continuity of the switches or the high voltage transformer, disconnect one lead wire from these parts and then check continuity with the AC plug removed. To do otherwise may result in a false reading or damage to your meter.
5. Do not touch any parts of the circuitry on the digital programmer circuit since static electric discharge may damage this control panel.
   Always touch yourself to ground while working on this panel to discharge any static charge in your body.
6. A 120V AC is present at the shaded area ⁘ of the digital programmer circuit (Terminals of power relays and primary circuit of low voltage transformer). When troubleshooting, be cautious of possible electrical shock hazard.

First of all operate the microwave oven following the correct operating procedures described on pages 34 ~ 42 in order to find the exact cause of any trouble.

[TROUBLE 1] The following visual conditions indicate a probable defective digital programmer circuit (D.P.C.) or membrane key board (membrane switch assembly).

A. In case of following conditions, D.P.C. is defective.

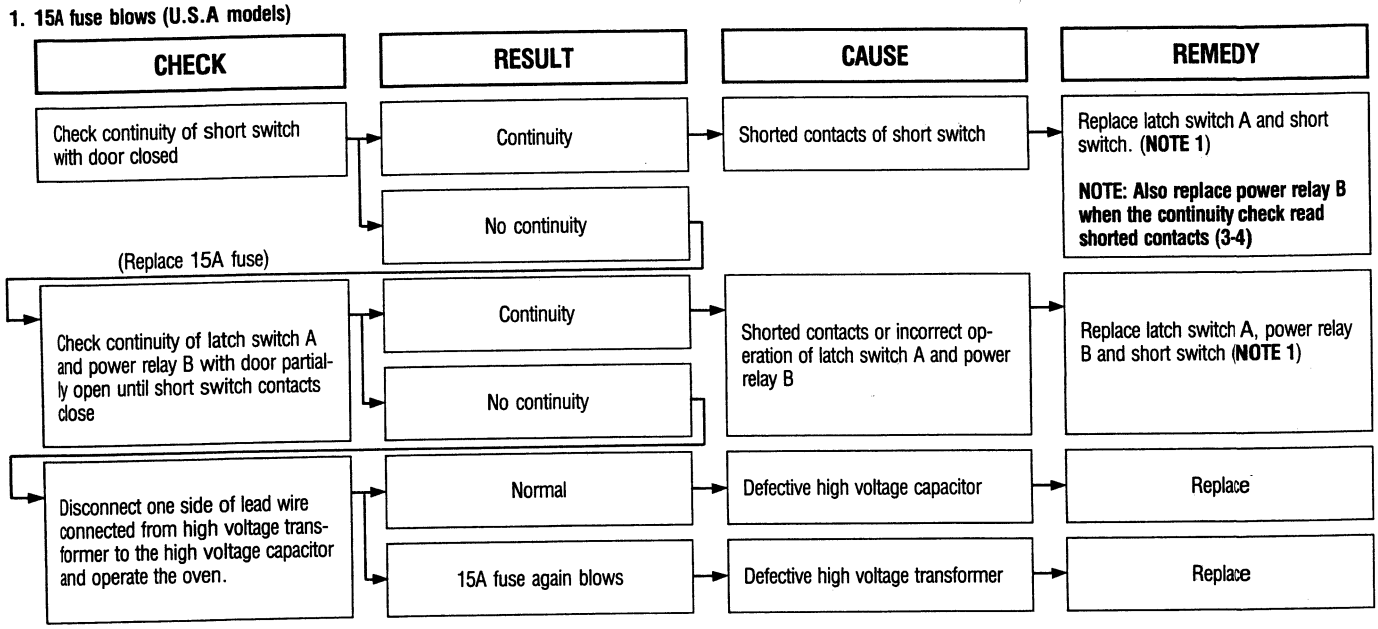
1. Incomplete segments.
   (A) Segments missing.
   (B) Partial segments missing.
   (C) Digit flickering other than normal fluorescent slight flickering.
   (D) Colon does not turn on or does not blink when the clock pad is tapped.
2. A distinct change in the brightness of one or more numbers in the display.
3. One or more digits in the display not on when they should be.
4. Wrong or no power indicator light for power level selected.
5. Specific numbers (for example 2 or 3) will not display.
6. Display does not count down with time cooking or when using display as a timer.
7. Display does not count up with clock operation.
8. Oven is programmable and cooks normally but no display shows.
9. Display obviously jumps in time while counting down or up.
10. Display counts down noticeably too fast while cooking.
11. Display cannot shift from the first stage cooking to the second stage cooking, even though Two Stage Cooking is programmed.
12. Display does not stop counting down with time cooking, even when STOP/RESET or HOLD/CLEAR Pad is tapped.
13. Time of day does not reappear when cooking is finished.

B. In case of following conditions, either D.P.C. or membrane switch is defective.

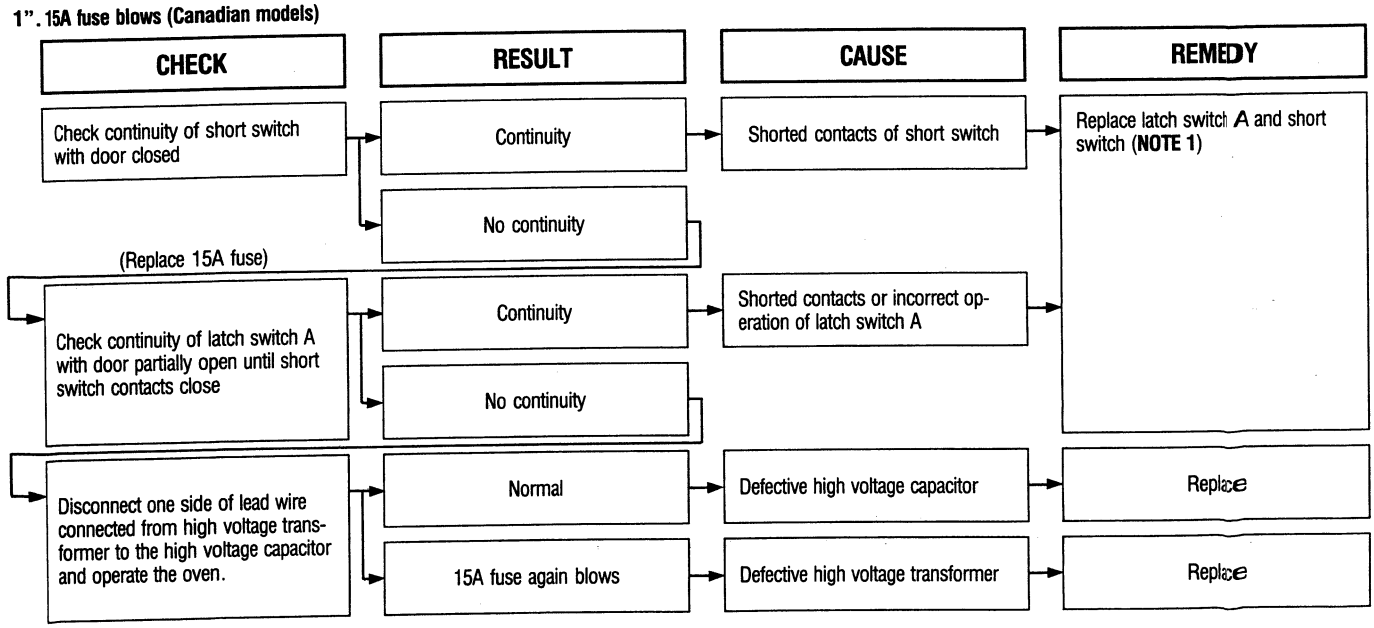
CHECK	RESULT	CAUSE	REMEDY
1. Clock set cannot be programmed at all.			
Check continuity of membrane switch with clock pad tapped. (See **Fig. 39A and 39B** on page 23.)	No continuity	Defective membrane switch	Replace
	Continuity	Defective DPC	Replace
2. Some inputs cannot be programmed.			
Check continuity of membrane switch (Refer to page 23 for the test procedures of membrane switch)	Some pads have no continuity	Defective membrane switch	Replace
	Normal	Defective DPC	Replace
3. Display indicates a number or figure different from one touched. Random programming when pressing other than touch pads or without pressing any at all. (intermittently)			
Replace membrane switch and recheck	Everythings works as specified	Defective membrane switch	Replace
	Still have trouble	Defective DPC	Replace

[TROUBLE 2] Oven does not operate at all; Display window does not display any figures and no key in of any pads will be accepted.

1. 15A fuse blows (U.S.A models)


CHECK
RESULT
CAUSE
REMEDY
Check continuity of short switch with door closed
Continuity
Shorted contacts of short switch
Replace latch switch A and short switch. (NOTE 1)
NOTE: Also replace power relay B when the continuity check read shorted contacts (3-4)
No continuity
(Replace 15A fuse)
Check continuity of latch switch A and power relay B with door partially open until short switch contacts close
Continuity
Shorted contacts or incorrect operation of latch switch A and power relay B
Replace latch switch A, power relay B and short switch (NOTE 1)
No continuity
Disconnect one side of lead wire connected from high voltage transformer to the high voltage capacitor and operate the oven.
Normal
Defective high voltage capacitor
Replace
15A fuse again blows
Defective high voltage transformer
Replace

1". 15A fuse blows (Canadian models)


CHECK
RESULT
CAUSE
REMEDY
Check continuity of short switch with door closed
Continuity
Shorted contacts of short switch
Replace latch switch A and short switch (NOTE 1)
No continuity
(Replace 15A fuse)
Check continuity of latch switch A with door partially open until short switch contacts close
Continuity
Shorted contacts or incorrect operation of latch switch A
No continuity
Disconnect one side of lead wire connected from high voltage transformer to the high voltage capacitor and operate the oven.
Normal
Defective high voltage capacitor
Replace
15A fuse again blows
Defective high voltage transformer
Replace

NOTE 1: These switches must be replaced at the same time.
(Refer to page 25 for adjustment instructions.)

2. Outlet has proper voltage. Fuse is not open.

CHECK	RESULT	CAUSE	REMEDY
Check continuity of thermal cutouts (magnetron) and (oven)	No continuity	Defective thermal cutout	Replace
Check continuity of power supply cord	No continuity	Open power supply cord	Replace
Disconnect CN1 connector and check continuity of low voltage transformer (Check between pin no. 8 and 10)	Infinity	Open winding of low voltage transformer	Replace low voltage transformer (on the DPC)
	Approx. 150~300Ω (Normal) (NN-9507/MQ8877)	Defective DPC	Replace
	Approx. 40~60Ω (Normal) (NN-9807/MQ8897)		

[TROUBLE 3] Display shows all figures selected, but oven does not start cooking even though desired program and time are set and start pad is tapped.

1. Oven lamp turns on but fan motor does not.

CHECK	RESULT	CAUSE	REMEDY
Check continuity of latch switch A with door closed.	No continuity	Faulty latch switch A	Replace
		Improper adjustment of latch mechanism	Adjust

2. Oven lamp and fan motor turn on.

CHECK	RESULT	CAUSE	REMEDY
Check DC voltage being applied to power relay B coil (RYB) **(NOTE 2)**	0 volts	Defective digital programmer circuit	Replace
	Normal	Faulty contacts of power relay B or open relay coil (on the DPC)	Replace
		Open lead wire (Ref. No. W3) (Refer to figure WIRING MATERIAL on page 44) **(NOTE 3)**	Replace lead wire (Ref. No. W3) and also magnetron
		Open winding of high voltage transformer or faulty insulation of filament winding **(NOTE 4)**	Replace
		Shorted diode **(NOTE 4)**	Replace
		Faulty magnetron **(NOTE 4)**	Replace

NOTE 2: **Connect DC volt meter between terminals of diode (D5) for power relay B (RYB) coil.**
Set power at High and operate the oven.
Normal digital programmer circuit should read approx. 18V DC continuously.

NOTE 3: **Unlike previous models, no protector is provided on lead wire W3.**
When magnetron filament is short-circuited, this W3 lead wire will be burnt and act as a protector.
When this lead wire is open, replace together with magnetron.

NOTE 4: **Refer to component test procedure on page 23.**

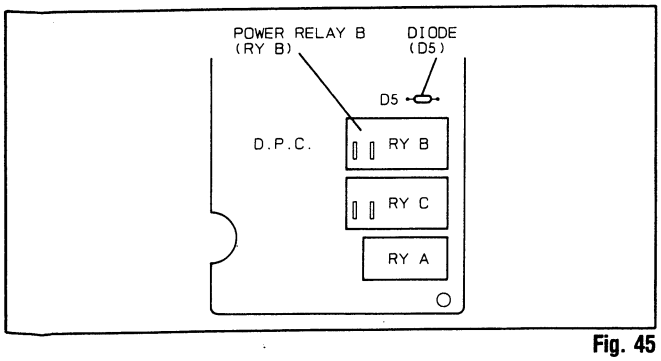
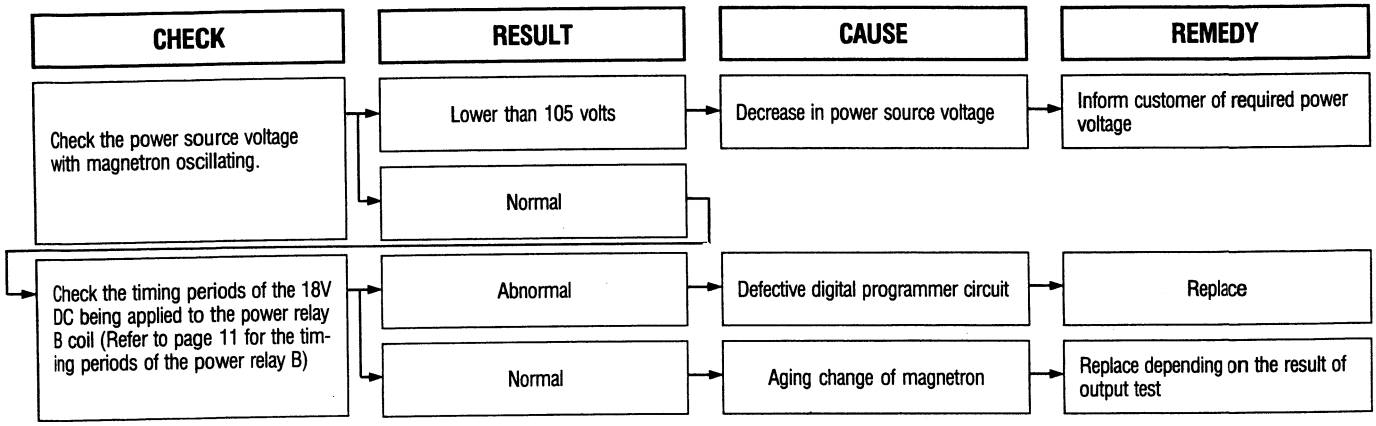
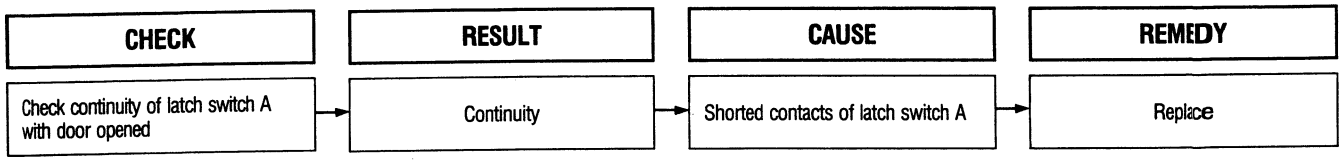


Fig. 45

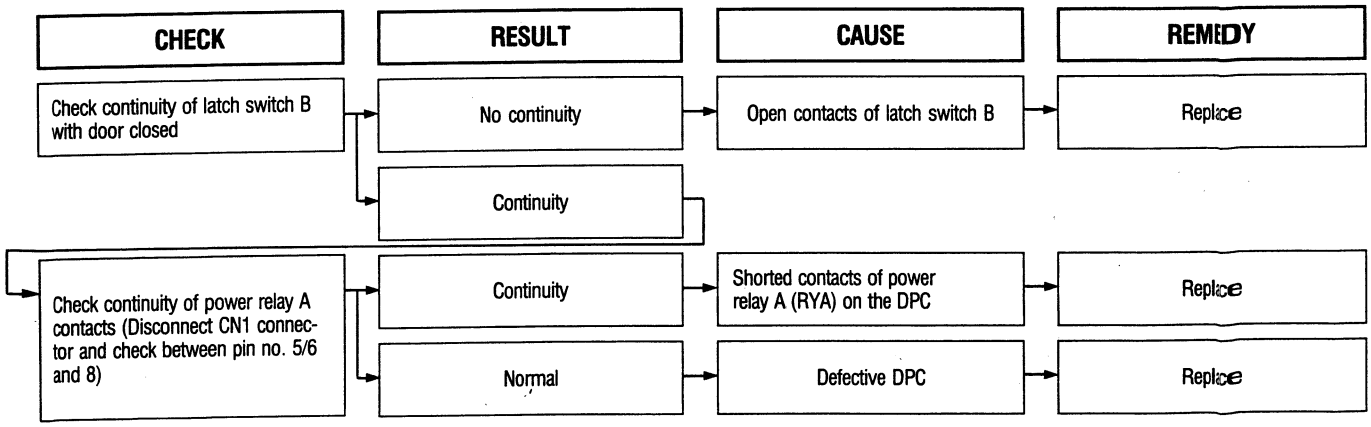
[TROUBLE 4] Microwave output power is low. First of all, check if output is really low by following "Measurement of microwave output" on page 25.


CHECK
RESULT
CAUSE
REMEDY
Check the power source voltage with magnetron oscillating.
Lower than 105 volts
Decrease in power source voltage
Inform customer of required power voltage
Normal
Check the timing periods of the 18V DC being applied to the power relay B coil (Refer to page 11 for the timing periods of the power relay B)
Abnormal
Defective digital programmer circuit
Replace
Normal
Aging change of magnetron
Replace depending on the result of output test

[TROUBLE 5] Oven lamp and heater fan motor turn on when door is opened. (U.S.A models)



[TROUBLE 6] Oven lamp and heater fan motor turn on when power supply cord is plugged into wall receptacle.



[TROUBLE 7] Magnetron oscillates for 1 ~ 5 minutes after start pad is tapped, then stops all functions of the oven. (Oven lamp and fan motor do not turn on.)

REASON: During first 1 ~ 5 minutes, magnetron is oscillating but fan motor does not rotate, causing heat up of magnetron to open main circuit by magnetron thermal cutout.

WARNING

A high voltage is generated in the secondary winding of the high voltage transformer and also high voltage circuit, even though fan motor does not rotate. Be very cautious for high voltage when troubleshooting.

CHECK	RESULT	CAUSE	REMEDY
Check DC voltage being applied to power relay A (RYA) coil (NOTE 5)	Approx. 18V DC	Faulty contacts of power relay A or open relay coil	Replace power relay A (RYA) on the DPC
	0 volts	Defective DPC	Replace

NOTE 5: Follow the test procedures as below:
(A) Unplug the oven power cord.
(B) Remove the DPC according to the procedure in paragraph 2.
(C) Reconnect CN1 CN2, CN3 and CN5 connectors to the DPC.
(D) Disconnect 2 lead wires connected to the high voltage transformer primary side, and isolate them.
(E) Plug in the oven power cord.
(F) Open the door.
(G) Connect DC volt meter between power relay A (RYA) coil terminals on the D.P.C.
(H) Check DC voltage being applied to the power relay A coil with door opened.

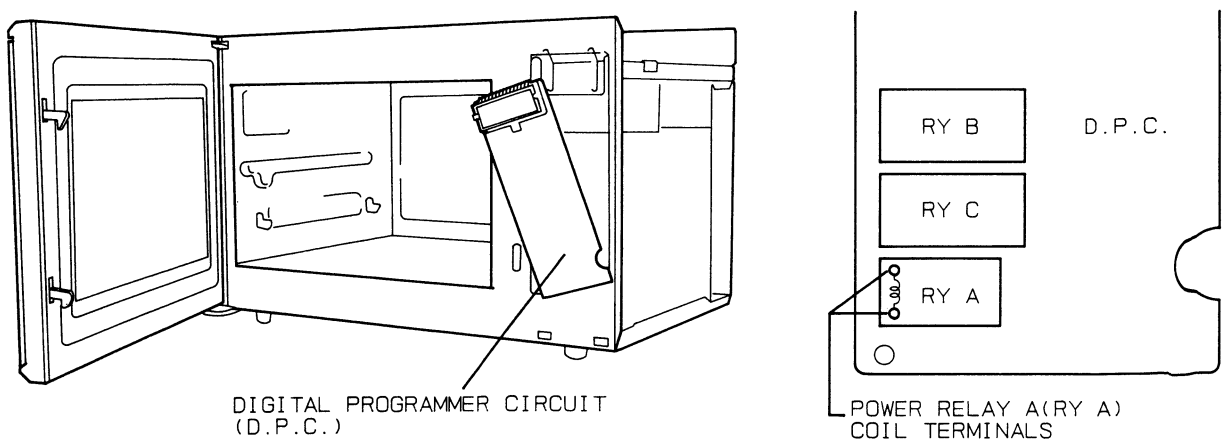
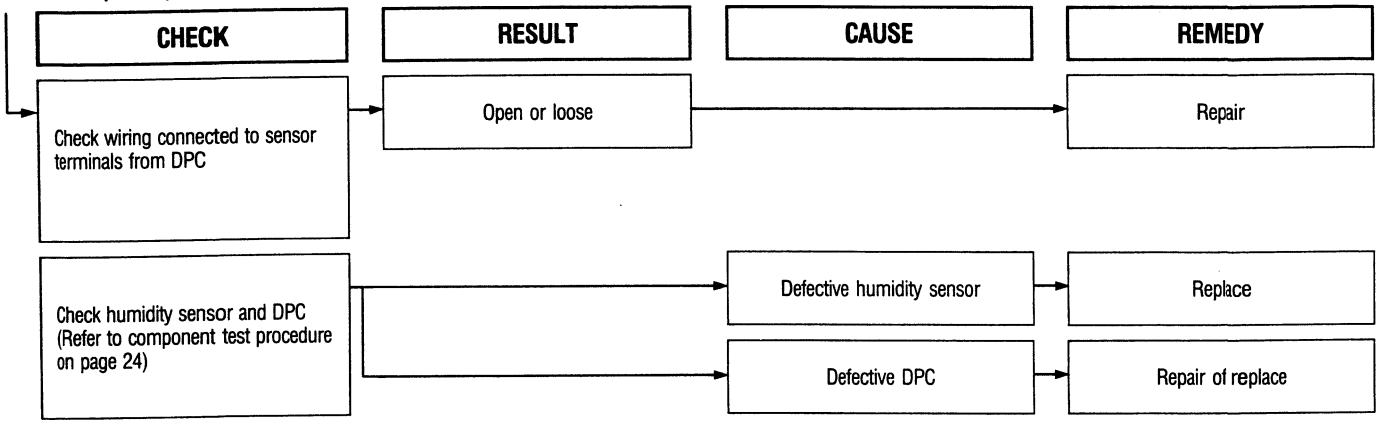


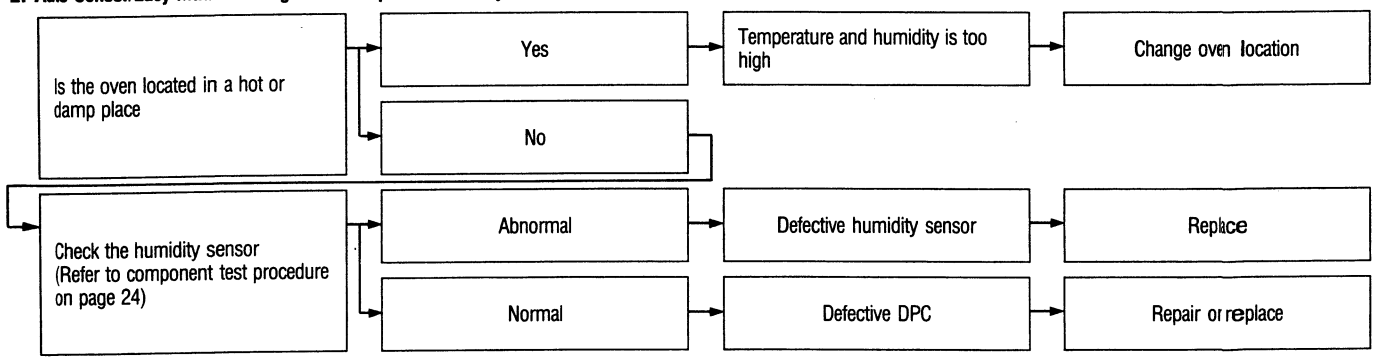
Fig. 46

[TROUBLE 8] Microwave oven does not operate normally, when Auto Sensor/Easy-Matic cooking is selected. (NN-9807/MQ8897)

1. Oven stops its operation within 60 seconds after start pad is tapped.



2. Auto Sensor/Easy-Matic cooking does not operate normally.



[TROUBLE 9] Microwave cooking program works normally, but convection cooking program does not.

1. Heater does not heat at all.

CHECK	RESULT	CAUSE	REMEDY
Remove 2 lead wires from heater terminals and check continuity of the heater	No continuity	Open heater	Repair
	Approx. 10Ω (Normal)		
Check DC voltage being applied to power relay C (RYC) coil	Approx. 18V DC	Faulty contacts of power relay C or open relay coil	Replace
	0V	Defective D.P.C.	Replace

[TROUBLE 10] Heater turns on when microwave cooking. In this case, this trouble should be causing fuse and/or home circuit breaker to open.

CHECK	RESULT	CAUSE	REMEDY
Check continuity of power relay C (Check between terminals 3 and 4)	Continuity	Faulty power relay C	Replace
	No continuity	Defective DPC	Replace

[TROUBLE 11] Combination cooking is not working in correct order

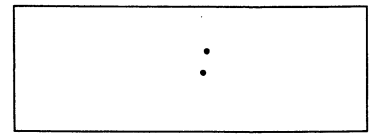
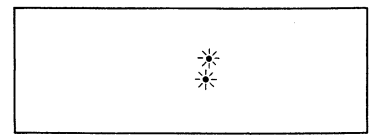
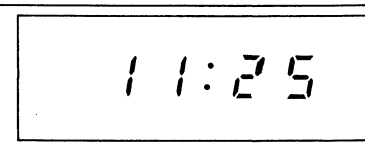
CHECK	RESULT	CAUSE	REMEDY
Check timing period of DC voltage being applied to power relay B and C (Refer to the description of combination cooking on page 13)	Abnormal	Defective DPC	Replace

[TROUBLE 12] "FF FF" appears in display window after 2 minutes elapsed in the convection or combination cooking mode.

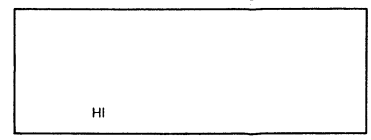
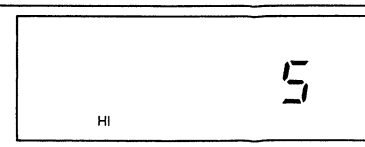
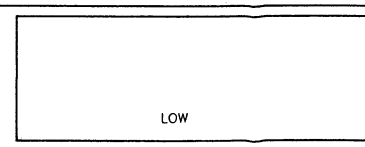
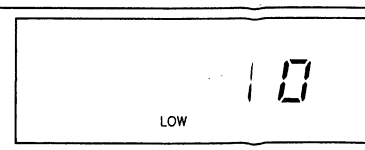
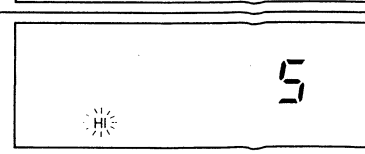
CHECK	RESULT	CAUSE	REMEDY
Check continuity of oven temp sensor with CN3 connector unplugged.	0Ω or infinity	Short or open oven temp sensor	Replace
	Normal	Defective DPC	Replace

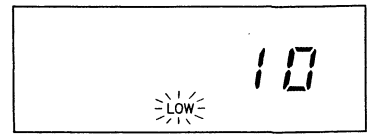
DIGITAL PROGRAMMER CIRCUIT TEST PROCEDURE

1. To Set Clock

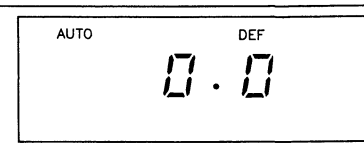
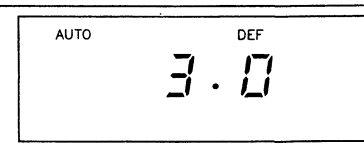
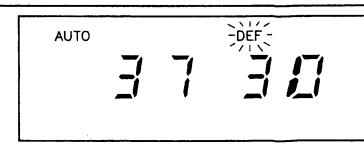
STEP	OPERATION	FUNCTION	DISPLAY
1	Plug the power supply cord into wall receptacle.	• Colon turns on.	
2	Tap Clock Pad	• Colon starts blinking.	
3	Enter time of day (TOD) by tapping appropriate number pads. Example: To Set 11:25 • Tap 10 min pad once • Tap 1 min pad once • Tap 10 sec pad twice • Tap 1 sec pad 5 times	• "11:25" appears in the display window. • Colon keeps blinking.	
4	Tap Clock Pad	• Colon stops blinking and stays on. • TOD has now been registered into the digital programmer circuit and will count up by minutes.	

2. Time Cooking (Two Stage Cooking)

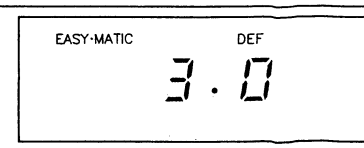
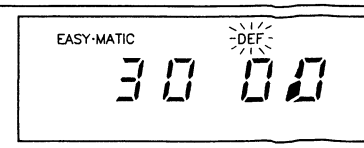
STEP	OPERATION	FUNCTION	DISPLAY
1	Place a water load in the oven		
2	Tap Power Pad once for High power (1st stage)	• Clock time disappears. • High power indicator light turns on.	
3	Set for 5 seconds by tapping Number Pad	• Cooking time "5" appears in the display window.	
4	Tap Power Pad four times for Low power (2nd stage)	• First stage cooking time "5" and High power indicator light disappear. • Low power indicator light turns on.	
5	Set for 10 seconds by tapping Number Pad	• Cooking time "10" appears in the display window.	
6	Tap Start Pad	• Second stage cooking time "10" and Low power indicator light disappear. • First stage cooking time "5" appears and counts down. • High power indicator light appears and starts blinking. • Oven lamp and fan motor turn on. • Microwave activity starts.	

STEP	OPERATION	FUNCTION	DISPLAY
7		When first stage cooking time has elapsed: • Oven automatically switches to second stage cooking. • Second stage cooking time "10" appears and counts down. • Low power indicator light appears and starts blinking.	
8		When second stage cooking time has elapsed: • Oven beeps five times and shuts off. • TOD reappears in the display window.	

3. Auto Weight Defrost (NN-9807/9507)

STEP	OPERATION	FUNCTION	DISPLAY
1	Tap Auto Weight Defrost Pad	• Clock time disappears. • "0.0" appears in the display window. • Auto Weight Defrost indicator light turn on.	
2	Set the weight for 3 pounds by tapping 1.0(lb) pad three times.	• Selected weight "3.0" appears in the display window.	
3	Tap Start Pad	• "3.0" disappears and defrosting time "37 30" appears and counts down. • Auto Weight Defrost indicator light starts blinking. • Oven lamp and fan motor turn on. • Microwave activity starts.	
4	Tap Stop/Reset Pad twice	• Oven shuts off. • TOD reappears in the display window.	

3". Easy-Matic Defrost (MQ8897/8877)

STEP	OPERATION	FUNCTION	DISPLAY
1	Set the weight for 3 pounds by tapping 1.0(lb) pad three times.	• Easy-Matic Defrost indicator lights turn on. • Selected weight "3.0" appears in the display window.	
2	Tap Start Pad	• "3.0" disappears and defrosting time "30 00" appears and counts down. • Easy-Matic Defrost indicator lights start blinking. • Oven lamp and fan motor turn on. • Microwave activity starts.	
3	Tap Hold/Clear Pad twice	• Oven shuts off. • TOD reappears in the display window.	

4. Auto Weight Frozen Cook (NN-9807/9507)

STEP	OPERATION	FUNCTION	DISPLAY
1	Tap Auto Weight Frozen Cook Pad three times.	• Clock time disappears. • Category number "3" appears in the display window. • Auto Weight Frozen Cook indicator lights turn on.	AUTO FROZ COOK 3
2	Set the weight for 10 ounces by tapping 10(oz) Pad once.	• Category number "3" disappears. • Selected weight "10" appears in the display window.	AUTO FROZ COOK 10
3	Tap Start Pad	• Weight "10" disappears and cooking time "10 00" appears and counts down. • Auto Weight Frozen Cook indicator lights start blinking. • Oven lamp and fan motor turn on. • Microwave activity starts.	AUTO FROZ COOK 10 00
4	Tap Stop/Reset Pad twice	• Oven shuts off. • TOD reappears in the display window.	

5. Auto Reheat (NN-9507)

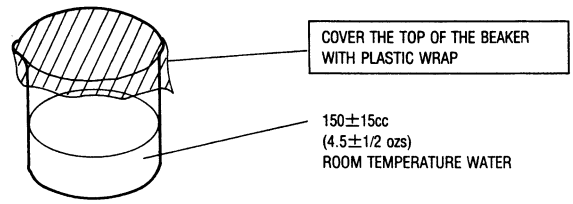
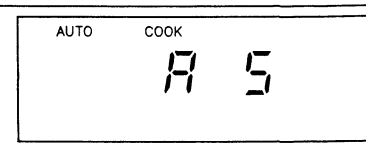
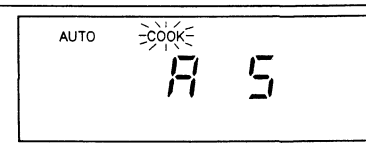
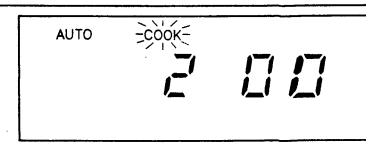
STEP	OPERATION	FUNCTION	DISPLAY
1	Tap Auto Reheat 1 Pad four times.	• Clock time disappears. • Category number and serving number "1-4" appear in the display window. • Auto Reheat indicator lights turn on.	AUTO REHEAT 1 - 4
2	Tap Start Pad	• Category number and serving number disappear. • Cooking time "50" appears and counts down. • Auto Reheat indicator light starts blinking. • Oven lamp and fan motor turn on. • Microwave activity starts.	AUTO REHEAT 50
3		When cooking time has elapsed: • Oven beeps five times and shuts off. • TOD reappears in the display window.	

5". Easy-Matic Reheat (MQ8897/8877)

STEP	OPERATION	FUNCTION	DISPLAY
1	Tap Easy-Matic Reheat Pad twice.	• Clock time disappears. • Category number "2" appears in the display window. • Easy-Matic Reheat indicator lights turn on.	EASY-MATIC REHEAT 2
2	Tap Start Pad	• Category number disappears. • Cooking time "1 30" appears and counts down. • Easy-Matic Reheat indicator lights start blinking. • Oven lamp and fan motor turn on. • Microwave activity starts.	EASY-MATIC REHEAT 1 30
3	Tap Hold/Clear Pad twice.	• Oven shuts off. • TOD reappears in the display window.	

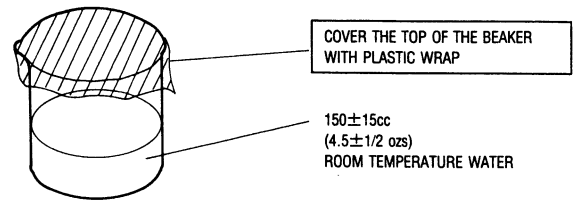
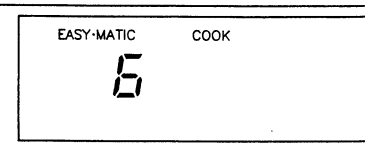
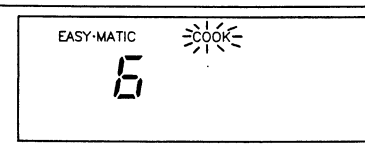
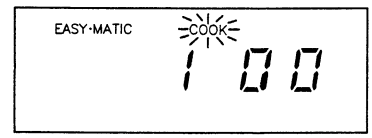
6. Auto Sensor Cooking (NN-9807)

NOTE: Make sure that the outer panel is installed before Auto Sensor Cooking Test, since Auto Sensor function does not operate properly without the outer panel.

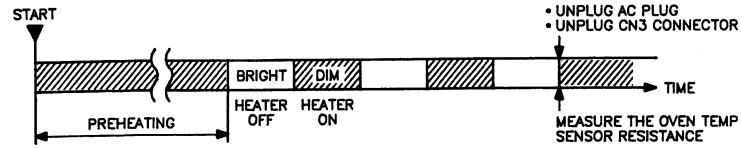
STEP	OPERATION	FUNCTION	DISPLAY
1	Pour 150±15cc (4.5±1/2 ozs) of room temperature water in a beaker, securely cover the top of the beaker with plastic wrap and place the beaker in the center of the oven.		
2	Tap Auto Sensot Cook Pad five times.	• Clock time disappears. • "A5" appears in the display window. • Auto Sensor Cook indicator light turn on.	
3	Tap Start Pad	• Auto Sensor Cook indicator light starts blinking. • Oven lamp and fan motor turn on. • Oven lamp will dime a little, about 50 seconds after Start Pad is tapped. This indicates that magnetron has started oscillation.	
4		When the humidity sensor detects steam about 2 to 4 minutes after the start Pad is tapped: • Auto Sensor Cooking (T1) automatically switches to time cooking (T2). • "A5" disappears and balance of cooking time "100~300" appears in the display window and counts down. **NOTE: Cooking time will vary depending on the water temperature, the shape of beaker or the power source voltage.**	
5	Tap Stop/Reset Pad twice	Oven shuts off. • Oven beeps five times and shuts off. • Auto Sensor Cooking indicator lights turn off. • TOD reappears in the display window.	

6". Easy-Matic Cooking (MQ8897)

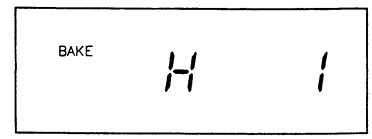
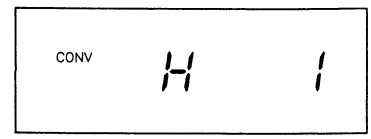
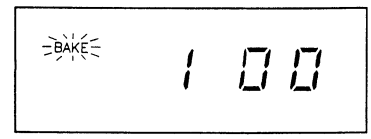
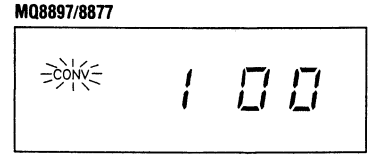
NOTE: Make sure that the outer panel is installed before Easy-Matic Cooking Test, since Easy-Matic Cooking function does not operate properly without the outer panel.

STEP	OPERATION	FUNCTION	DISPLAY
1	Pour 150±15cc (4.5±1/2 ozs) of room temperature water in a beaker, securely cover the top of the beaker with plastic wrap and place the beaker in the center of the oven.		
2	Tap Easy-Matic Cook Pad six times.	• Clock time disappears. • "6" appears in the display window. • Easy-Matic Cooking indicator lights turn on.	
3	Tap Start Pad	• Easy-Matic Cooking indicator light starts blinking. • Oven lamp and fan motor turn on. • Oven lamp will dime a little, about 50 seconds after Start Pad is tapped. This indicates that magnetron has started oscillation.	
4		When the humidity sensor detects steam about 2 to 4 minutes after the Start Pad is tapped: • Auto Sensor Cooking (T1) automatically switches to time cooking (T2). • "6" disappears and balance of cooking time "30~1 30 appears in the display window and counts down. **NOTE: Cooking time will vary depending on the water temperature, the shape of beaker or the power source voltage.**	
5	Tap Hold/Clear Pad twice.	• Oven shuts off. • Easy-Matic Cooking indicator lights turn off. • TOD reappears in the display window.	

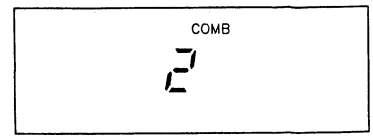
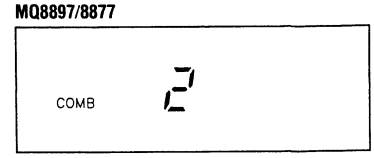
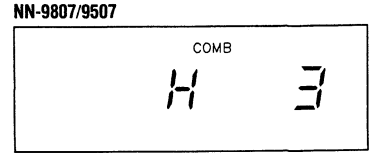
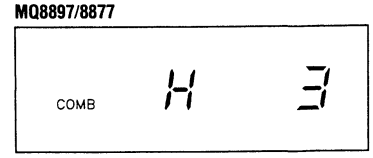
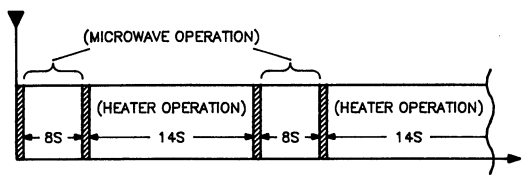
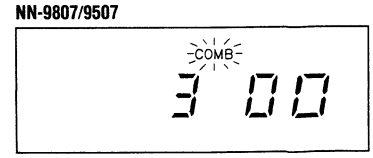
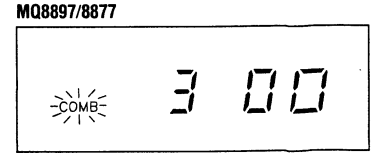
7. Convection (Auto Preheating)

STEP	OPERATION	FUNCTION	DISPLAY
1	Be sure to place only the white ceramic tray in the oven.		
2	Tap Bake or CONVEC Pad twice.	• Clock time disappears. • Convection cooking indicator light turns on. • Selected oven temp. "22 5F" appears in the display window.	**NN-9807/9507** BAKE 225F **MQ8897/8877** CONV 225F
3	Tap Start Pad.	• "P" (meaning preheating) appears in the display window. • Convection cooking indicator light begins to blink. • Oven lamp turns on. • Preheating begins.	**NN-9807/9507** BAKE P **MQ8897/8877** CONV P
		• When preheating is completed, oven beeps three times. • "P" begins to blink. • Oven lamp stays on. • After preheating is completed, oven lamp should intermittently become a little bright and dim. Wait for a couple of bright and dim cycles. This indicates that heater turns on and off to keep a constant oven temp.	**NN-9807/9507** BAKE P **MQ8897/8877** CONV P
4	As soon as oven lamp dims unplug the AC power plug and CN3 connector from DPC. Measure the oven sensor resistance with ohmmeter as soon as possible. It should read (approx) 70 — 100 kohm.  CAUTION: TO PREVENT BURNS KEEP YOUR BODY, HANDS AND FINGERS AWAY FROM THE OVEN. THE OVEN GETS VERY HOT BOTH DURING AND AFTER HEATER OPERATION. NOTE: The programmed temperature of 225°F, will be read around the center of the oven, the temp read at the area of the oven sensor can be up to 50°F higher. NOTE: If door is not opened after preheating, oven will maintain the selected temperature for 30 minutes. After 30 minutes, oven will shut off automatically.		

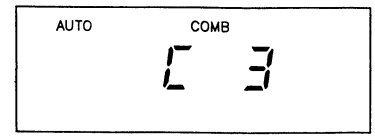
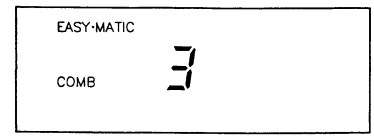
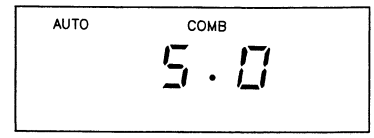
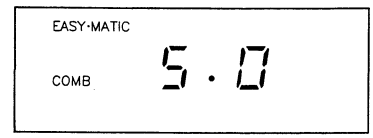
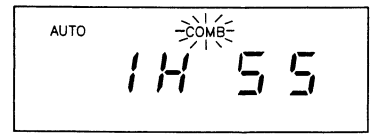
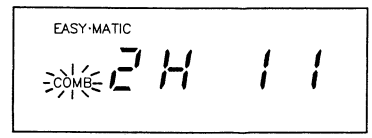
8. Convection (Time cooking)

STEP	OPERATION	FUNCTION	DISPLAY
1	After completion of preheating, be sure to open the door.	• When door is opened, "P" and "BAKE or CONV" stop blinking and stay on.	
2	Close the door and set Convection cooking time for 1 minute.	• "P" disappears and Convection cooking time "H 1" appears in the display window.	**NN-9807/9507**  **MQ8897/8877** 
3	Tap Start Pad.	• Oven lamp turns on. • Convection cooking begins. • Convection cooking indicator light begins to blink. • Convection cooking time counts down.	**NN-9807/9507**  **MQ8897/8877** 
		• When convection cooking is completed, oven beeps five times and shuts off automatically. • Convection cooking indicator light turns off. • T.O.D. appears in the display window.	

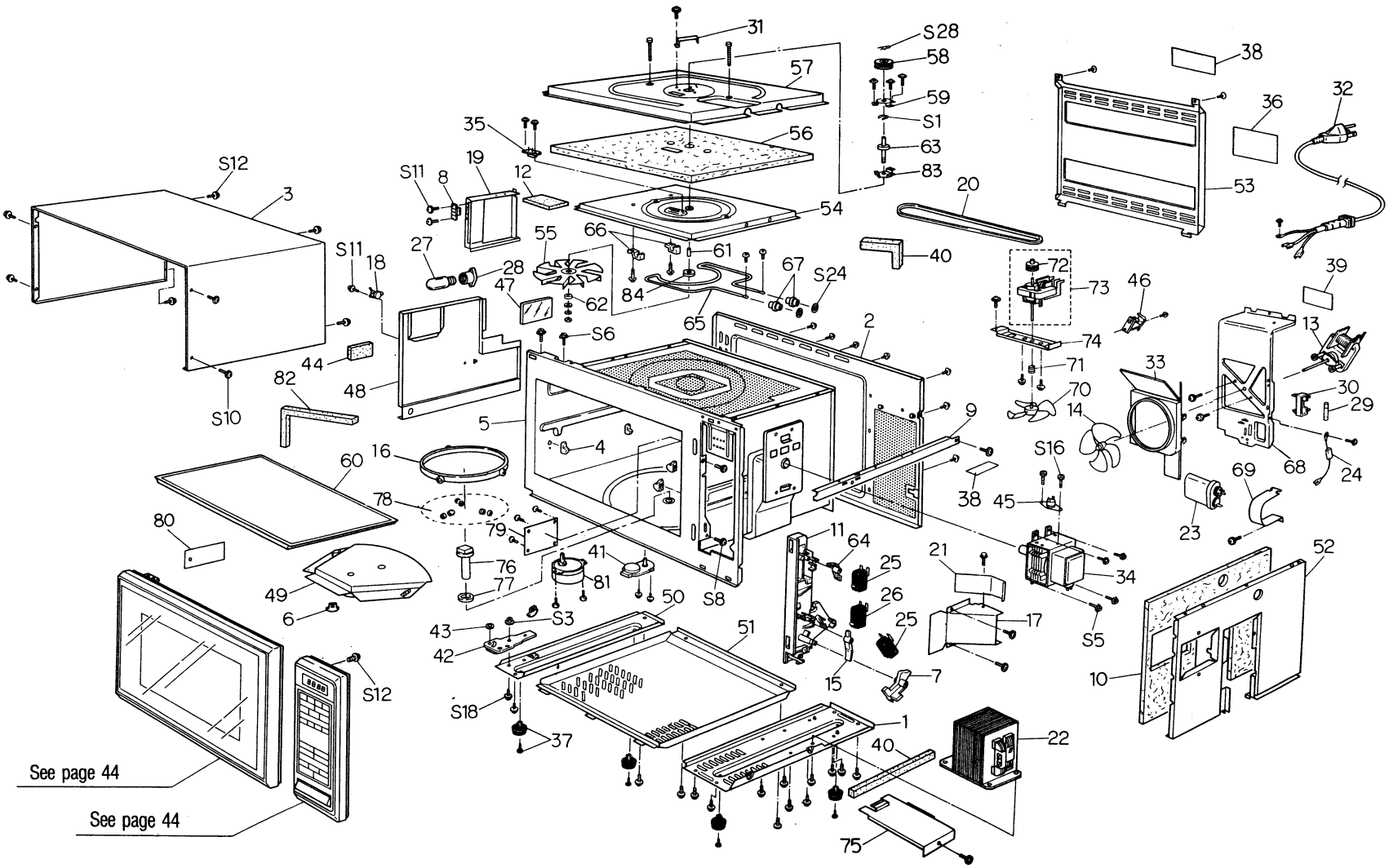
9. Combination (Time cooking)

STEP	OPERATION	FUNCTION	DISPLAY
1	Tap Combi or COMB Pad twice.	• Category number "2" appears in the display window. • Combination cooking indicator light turns on.	**NN-9807/9507**  **MQ8897/8877** 
2	Set combination time for 3 minutes.	• Category number "2" disappears and Combination Cooking time "H 3" appears in the display window.	**NN-9807/9507**  **MQ8897/8877** 
3	Tap Start Pad	• Oven lamp turns on. • Combination cooking begins. • Combination cooking indicator light begins to blink. • Combination cooking time starts counting down. **NOTE:** **During combination cooking, in every 22 second time period, the cooking modes are switched with a 8 second microwave power period then 14 seconds of convection heater operation.** 	**NN-9807/9507**  **MQ8897/8877** 

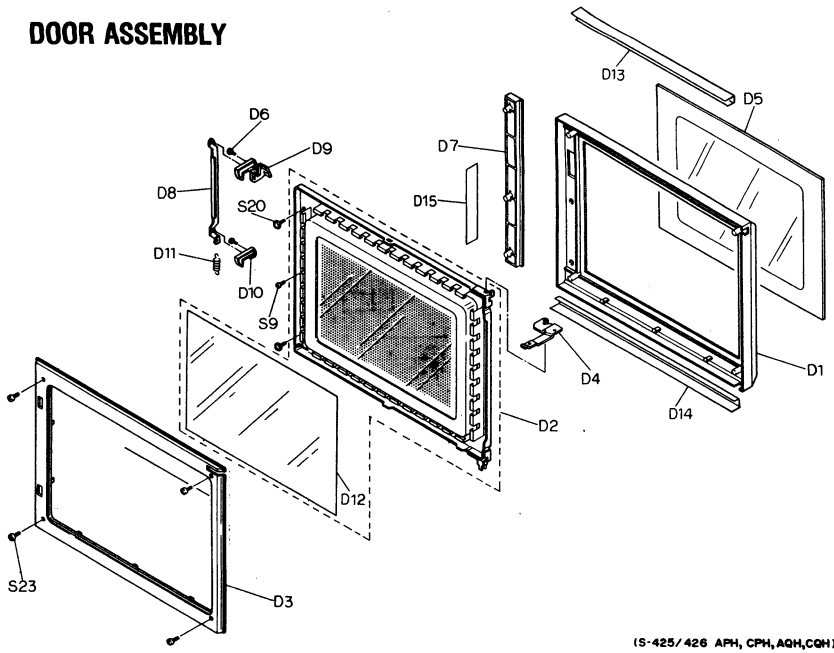
10. Auto/Easy-Matic Weight Combination

STEP	OPERATION	FUNCTION	DISPLAY
1	Tap Auto/Easy-Matic Weight Control, Combination Pad 3 times.	• Clock time disappears • Auto Weight Combination Cooking indicator lights turn on. • Category number "C3 or 3" appears.	**NN-9807/9507**  **MQ8897/8877** 
2	Set the weight for 3 pounds by tapping 1.0 (lb) pad 3 times.	• Category number "C3 or 3" disappears and selected weight "5.0" appears in the display window.	**NN-9807/9507**  **MQ8897/8877** 
3	Tap Start Pad	• Selected weight "5.0" disappears and Combination Cooking time appears and starts counting down. • Auto Weight Combination Cooking indicator light begins blinking. • Auto Weight Combination Cooking begins.	**NN-9807/9507**  **MQ8897/8877** 
4	Tap Stop/Reset or HOLD/CLEAR Pad twice.	• Oven shuts off. • The display window will show TOD again.	

EXPLODED VIEW

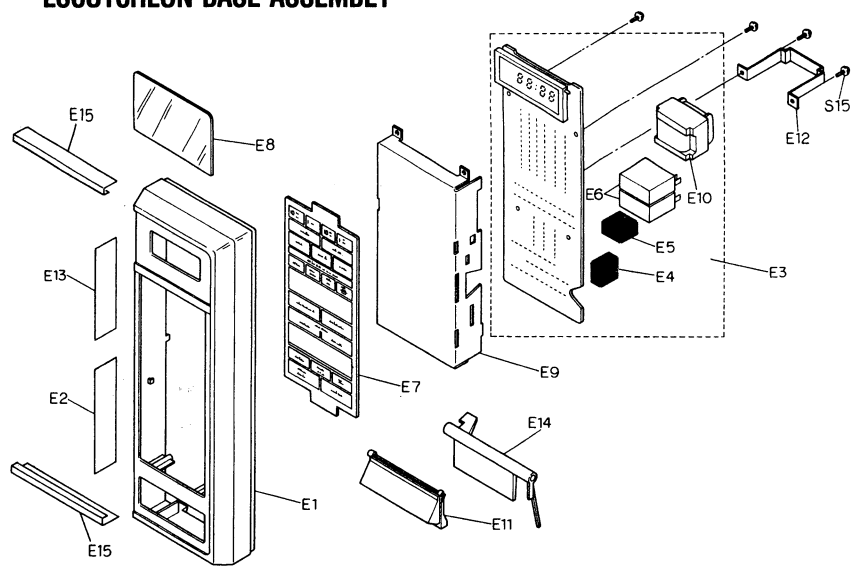


DOOR ASSEMBLY



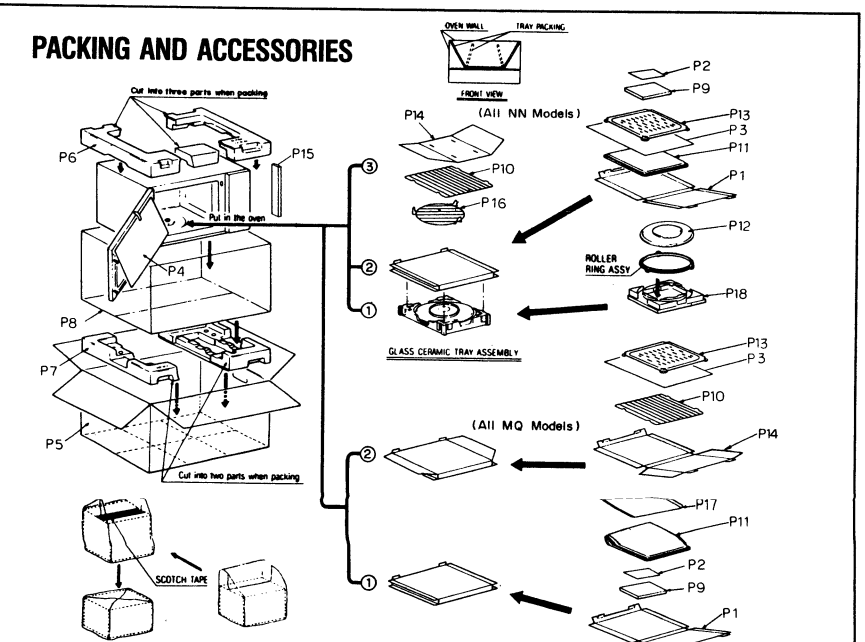
(S-425/426 APH, CPH, AQH, CQH)

ESCUTCHEON BASE ASSEMBLY



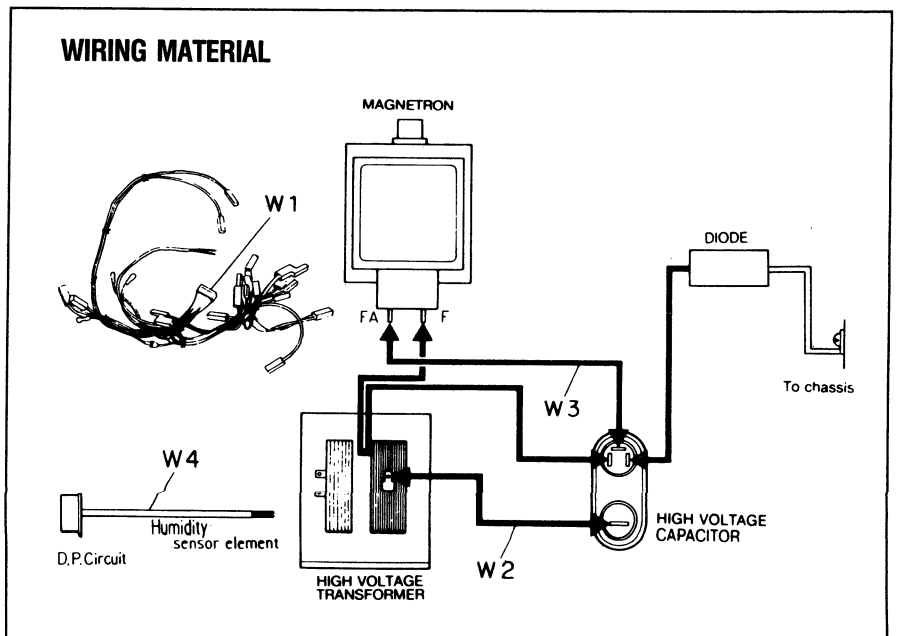
(S-425/426 APH, CPH, AQH, CQH)

PACKING AND ACCESSORIES



(S-425/426 APH, CPH, AQH, CQH)

WIRING MATERIAL



(S-425/426 APH, CPH, AQH, CQH)

PARTS LIST

NOTE 1: When ordering replacement part(s), please use part number(s) shown in this parts list. Do not use description of the part.

2: Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

3: Alphabet marks in Remarks columns (i.e. APH, AQH, etc) indicate parts applicable to only specified country models as follows

APH: For U.S.A. and some of Latin America countries, CPH: For Canada
AQH: For U.S.A., CQH: For Canada

Parts without these marks can be used for all models.

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
1		A10014250AP	Base	1	
2		A10044250AP	Back panel	1	
3		A10094250AP	Outer panel assy	1	
4		A20024210AQ	Cook plate rail	4	All MQ Models
5	⚠	A200A4250AP	Oven	1	All NN Models
	⚠	A200A4250AQ	Oven	1	All MQ Models
6		A20194210AQ	Stirrer stopper	2	All MQ Models
7		ANE31372Q0AP	Hook spacer B	1	
8		A601L4030AP	Humidity sensor	1	MQ8897BW, NN-9807
9		A20344250AP	Reinforce bracket A	1	
10		A22434250AP	Adiabatic material B	1	
11	⚠	ANE30207J0AP	Door hook A	1	
12		A41034210AQ	Air guide cushion B	1	
13		A400A4210AP	Fan motor	1	
14		ANE40086W0AP	Fan	1	
15		ANE31382Q0AP	Hook spacer C	1	
16		ANE290D2L0AP	Roller ring assy	1	All NN Models
17		A40254250AP	Air guide A	1	
18		A61454210AP	Thermal cutout	1	(For Oven)
19		A400K4250AP	Exhaust guide	1	MQ8877BW, NN-9507
		A400K4260AP	Exhaust guide	1	MQ8897BW, NN-9807
20		A41554250AP	Belt C	1	(Si)
21		A40264250AP	Air guide B	1	
22	⚠	A600B4210AP	H.V.Transformer	1	
23	⚠	A60904010AP	H.V.Capacitor	1	(0.935μF, AC2000V)
24	⚠	A62024000AP	Diode	1	(Si)
25	⚠	ANE61424L0AG	Switch	2	Latch switch A, B (V-16G-3C26)
26	⚠	ANE61784L0AG	Switch	1	Short switch (V-16G-2C25)
27		ANE6030540AP	Oven lamp	1	(125V, 20W)
28		A61524210AP	Oven lamp socket	1	
29	⚠	ANE6230B00AP	Fuse	1	(15A)
30		A62314000AP	Fuse holder	1	
31		A12074250AP	Reinforce bracket	1	
32		A900C4250AP	Power supply cord	1	Except Canada
		A900C4250CP	Power supply cord	1	Canada
33		A41444250AP	Orifice	1	
34	⚠	2M210-M1	Magnetron	1	
35		A605Y4210AQ	Oven temp sensor	1	
36		ANE0006L90AP	Warning label	1	Except Canada
		ANE0006R30CP	Warning label	1	Canada
37		A10084210AP	Rubber foot	4	
38		ANE00322L0AP	Ground label	2	Except Canada
39		A00334210AP	Fuse label	1	
40		ANE000Z000AA	Cushion rubber A	2	
41		A61444000AQ	Antenna motor	1	(2W) All MQ Models
42	⚠	A301L4210AP	Lower hinge	1	
43		ANE3081B60AP	Door hinge spacer	1	
44		ANE0922000JE	Cushion rubber C	1	
45		A61454000AP	Thermal cutout	1	(For Magnetron)
46		ANE11408A0AG	Stopper A	1	
47		A64374250AP	Glass plate	1	(For oven lamp)
48		A22374250AP	Left heater panel	1	
49		A202K4250AQ	Antenna	1	(Moving antenna) All MQ Models
50		A11294250AP	Base B	1	
51		A101A4250AP	Base C	1	
52		A22364250AP	Right heater panel	1	All NN Models
		A22364250AQ	Right heater panel	1	All MQ Models
53		A10584250AP	Back panel cover A	1	
54		A203L4250AP	Upper panel B	1	
55		A22394250AP	Circulation fan	1	
56		A22424250AP	Adiabatic material A	1	
57		A22784250AP	Upper heater panel	1	
58		ANE41322L0AP	Pulley B	1	
59		A41574250AP	Fan bracket A	1	
60		A010T4250AQ	Shelf	1	All MQ Models
61		A41614210AQ	Spacer A	1	
62		ANE41622L0AP	Spacer B	1	
63		A41644210AA	Shaft assy	1	
64		ANE31362Q0AP	Hook spacer A	1	
65		A630G4210AQ	Heater A	1	
66		A64174210AQ	Heater support	2	
67		ANE6501K90AP	Holder C	2	
68		A41124250AP	Fan motor bracket B	1	
69		ANE6037X00AP	Capacitor bracket	1	
70		ANE40082L0AP	Fan	1	
71		ANE4057-F50	Spring	1	
72		ANE41312L0AP	Pulley A	1	
73		A41794210AP	Heater fan motor assy	1	
74		A41804250AP	Bracket	1	
75		A11264210CP	Base metal	1	Canada
76		ANE200YX00AP	Pulley shaft	1	All NN Models
77		A21774250AP	Washer	1	All NN Models
78		ANE202K2L0AP	Roller B assy	1	All NN Models (NOTE 4)
79		A20554250AP	Cover A	1	All NN Models
80		A23544250AP	Cover B	1	All NN Models
81		A63264250AP	Turntabel motor	1	(4W) All NN Models
82		ANE0929000AJ	Cushion rubber	1	
83		A41584210AQ	Fan bracket B	1	
84		A41634250AP	Spacer C	1	

NOTE 4: When ordering the roller B assy, each three rollers and washers will be shipped.
When replacing the roller B, each three rollers and washers should be replaced at the same time.
Otherwise the glass cooking tray may not turn smoothly.

(S-425/426 APH, CPH, AQH, CQH)

DOOR ASSEMBLY

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
D1	⚠	A30014250AP	Door A assy	1	All NN Models (NOTE 5)
	⚠	A30014250AQ	Door A assy	1	All MQ Models (NOTE 5)
D2	⚠	A302K4250AP	Door E assy	1	
D3	⚠	A30854250AP	Door C	1	
D4	⚠	A300B4210AP	Upper hinge	1	
D5		A31464250AP	Door screen B assy	1	All NN Models
		A31464250AQ	Door screen B assy	1	All MQ Models
D6		ANE30567J0AP	Door Key pin	2	
D7		A30124250AP	Door handle	1	All NN Models
		A30124250AQ	Door handle	1	All MQ Models
D8		A301H4210AP	Door key lever B	1	
D9		ANE30182Q0AP	Door key A	1	
D10		ANE30192Q0AP	Door key B	1	
D11		ANE3021X00AP	Door key spring	1	
D12		A31454250AP	Door screen A	1	
D13		A30664250AP	Upper sash	1	All NN Models
D14		A30674250AP	Lower sash	1	All NN Models
D15		ANE0411K20CP	CSA label	1	Canada

NOTE 5: Please order CSA label together.

ESCUTCHEON BASE ASSEMBLY

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
E1		A80344250AP	Escutcheon base	1	(NOTE 6) NN-9507
		A80344260AP	Escutcheon base	1	(NOTE 6) NN-9807
		A80344250AQ	Escutcheon base	1	(NOTE 6) All MQ Models
E2		A01574250AP	Name plate	1	NN-9507 APH
		A01574260AP	Name plate	1	NN-9807 APH
		A01574250AQ	Name plate	1	MQ8877BW AQH
		A01574260AQ	Name plate	1	MQ8897BW AQH
E3		A603L4250AP	D.P.Circuit assy	1	NN-9507 (W/Component)
		A603L4260AP	D.P.Circuit assy	1	NN-9807 (W/Component)
		A603L4250AQ	D.P.Circuit assy	1	MQ8877BW (W/Component)
		A603L4260AQ	D.P.Circuit assy	1	MQ8897BW (W/Component)
E4		AEAWG4H0T18	Power relay	1	(G4H-117P-US) (RY4)
E5		AEG5R51T18A	Power relay	1	(G5R5-A) (RY1)
E6		AEAW5W1ER18A	Power relay	2	(G5W-1112TP-ER18) (RY2, RY3)
E7		A64794210AP	Membrane switch	1	NN-9507
		A64794230AP	Membrane switch	1	NN-9807
		A64794210AQ	Membrane switch	1	MQ8877BW
		A64794230AQ	Membrane switch	1	MQ8897BW
E8		A81264250AP	Smoke panel	1	All NN Models
		A81264250AQ	Smoke panel	1	All MQ Models
E9		A81274210AP	Bracket	1	All NN Models
		A81274210AQ	Bracket	1	All MQ Models
E10		A62494210AQ	L.V.Transformer	1	NN-9507, MQ8877BW (ETP41K210A)
		A62494230AP	L.V.Transformer	1	NN-9807, MQ8897BW (ETP48K87A)
E11		A80724210AP	Door opening button	1	
E12		A65514210AQ	L.V.T.Support bracket	1	NN-9507, MQ8877BW
		ANE6551R20AP	L.V.T.Support bracket	1	NN-9807, MQ8897BW
E13		ANE0245X00AP	DHHS label	1	Except Canada
E14		A82564210AP	Door opening lever	1	
E15		A80364210AP	Escutcheon sash	2	All NN Models

NOTE 6: Please order name plate and DHHS label together.

PACKING AND ACCESSORIES

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
P1		A01174250AP	Packing B	1	All NN Models
		A01174250AQ	Packing B	1	All MQ Models
P2		A00034250AP	Instruction book	1	NN-9507/NN-9807 APH
		A00034250CP	Instruction book	1	NN-9507/NN-9807 CPH
		A00034210AQ	Instruction book	1	MQ8877BW/MQ8897BW AQH
		A00034250CQ	Instruction book	1	MQ8877BW/MQ8897BW CQH
P3		ANE02072L0AP	Styrol sheet	1	
P4		ANE0107580AP	Door sheet	1	
P5		A01024250AP	Outer case	1	NN-9507 APH
		A01024250CP	Outer case	1	NN-9507 CPH
		A01024260AP	Outer case	1	NN-9807 APH
		A01024260CP	Outer case	1	NN-9807 CPH
		A01024250AQ	Outer case	1	MQ8877BW AQH
		A01024250CQ	Outer case	1	MQ8877BW CQH
		A01024260AQ	Outer case	1	MQ8897BW AQH
		A01024260CQ	Outer case	1	MQ8897BW CQH
P6		A01044250AP	Upper filler	1	
P7		A01054250AP	Lower filler	1	
P8		ANE0106910AP	Vinyl cover	1	
P9		A000B4250AP	Cook book	1	NN-9507/NN-9807 APH
		A000B4250CP	Cook book	1	NN-9507/NN-9807 CPH
		A000B4230AQ	Cook book	1	MQ8877BW/MQ8897BW AQH
		A000B4250CQ	Cook book	1	MQ8877BW/MQ8897BW CQH
P10		A06024250AP	Oven broiling rack	1	All NN Models
		A06024250AQ	Oven rack	1	All MQ Models
P11		A06034250AP	Broil pan	1	All NN Models
		A060W4250AQ	Broil pan B	1	All MQ Models
P12		ANE06012L0AP	Glass ceramic tray	1	All NN Models
P13		A06484250AP	Spatter shield	1	
P14		A01084250AP	Tray packing	1	All NN Models
		A01084250AQ	Tray packing	1	All MQ Models
P15		ANE0145110AG	Door sheet B	1	
P16		A06414250AP	Oven roasting rack	1	All NN Models
P17		A07144210AQ	Cookie sheet	1	All MQ Models
P18		A01134250AP	Tray styrol	1	All NN Models

WIRING MATERIAL

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
W1		A030A4250AP	Lead wire harness	1	Except Canada
		A030A4250CP	Lead wire harness	1	Canada
W2		A03504210AP	Lead wire	1	
W3		A03514210AP	Lead wire	1	(NOTE 7)
W4		A03534230AP	Lead wire	1	NN-9807, MQ8897BW

NOTE 7: When this lead wire is open, replace together with magnetron.

(S-5/426 APH, CPH, AQH, CQH)

STANDARD PARTS

Ref. No.		Part No.	Description	Size (mm)	Q'ty	Usage
S1		XUEANE32KP	U ring		1	Shaft
S2		XTW4+12Q	Screw	4X12	4	Bracket
S3		XNWANE5ES	Nut	M5	1	Lower hinge
S4		XNG4EVS	Nut	M4	1	Circulation fan
S5		XTWANE4+10RU	Screw	4X10	4	Magnetron
S6		XYEANE5+E10S	Screw	5X10	2	Upper hinge
S7		XTW3+6B	Screw	3X6	2	Stirrer motor
S8		XTW4+12T	Screw	4X12	2	Door hook A
S9		XTNANE4+10B	Screw	4X10	1	Door handle
S10		XTC4+12BC	Screw	4X12	4	Outer panel
S11		XTWANE3+8BN	Screw	3X8	2	Oven temp sensor
					2	Humidity sensor (NN-9807, MQ8897BW)
					1	Reinforce bracket
					2	Upper heater panel
					1	Left heater panel
					2	Right heater panel
					1	Thermal cutout (For Oven)
S12		XTWANE4+12D	Screw	4X12	1	Power supply cord ground
					4	Outer panel
					4	H.V.Transformer
					1	Stopper A
					2	Fan motor bracket B
					2	Base B
					2	Escutcheon base
					2	Base C
					4	Base
					1	Reinforce bracket
					1	Base metal
S13		XTWANE4+8S	Screw	4X8	2	Fan motor
					2	Heater fan motor
S14		XTWANE3+8B	Screw	3X8	1	Diode ground
S15		XTWANE4+12B	Screw	4X12	1	Capacitor bracket
					2	L.V.T.Support bracket
S16		XTEANE3+6B	Screw	3X6	2	Thermal cutout (For magnetron)
S17		XWA4BV	Washer	M4	1	Shaft
S18		XYEANE5+E20T	Screw	5X20	1	Lower hinge
S19		XTWANE35+14N	Screw	3.5X14	2	Heater support
S20		XTW4+8T	Screw	4X8	2	Door handle
S21		XYF4+AF6	Screw	4X6	1	Air guide A
S22		XTWANE4+12BN	Screw	4X12	2	Back panel cover A
					2	Back panel
					6	Heater fan motor
S23		XTBANE4+12FK	Screw	4X12	4	Door C
S24		XUBANE66FZ	CS ring		2	Heater A
S25		XWG4BV	Washer	M4	1	Shaft
S26		XYT35+C8VS	Screw	3.5X8	2	Heater A
S27		XTWANE4+8BN	Screw	4X8	2	Fan bracket A
					2	Air guide A
S28		XPD8A28KP12	Wire pin	8X28	1	Pulley B
S29		XST4+5US	Screw	4X5	4	Cover
S30		XTB5+31EC	Screw	5X31	2	Upper heater panel

WP-330
S-425/426APH/CPH/AQH/CQ
Printed in Japan
Ⓜ, Ⓝ & Ⓔ